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HOW SHALL WE TEACH GEOGRAPHY?

III.

LESSONS ABOUT HOME.

I. Physical Forms.—The lessons on the home neighborhood, spoken of in the preceding article of this series, must necessarily be *oral*. Teachers accustomed to give oral lessons, and familiar with the principles to be observed in their preparation, will need no aids in the preparation of these lessons on the physical features of the neighborhood in which their pupils live. Many teachers, however, will perhaps find the following report of a lesson on a neighborhood in Western New York of assistance, as suggesting, better than any set of directions could do, the method of proceeding. The pupils are the children of the farmers of the neighborhood, and the time summer.

Teacher. I would like all of you to think carefully a moment, and try to remember everything you saw on your way to school. (Several hands are raised, and the pupils, one after another, are called on to state what they saw.)

John. I saw some men mowing in Mr. B.'s meadow.

Charles. I saw a red squirrel running along the fence by the woods.

Mary. I saw some cows and a colt, and two calves, and some sheep and lambs, in Mr. G.'s pasture.

Fanny. I saw some cherries that are turning red in the orchard across the road.

T. You have remembered several things, and I have no doubt if you should think a little longer you could name many more;

but we have as many as we can talk about in one morning. We are going to have a lesson on some of the things you have seen in coming to school. Mary spoke of something she saw in a *pasture*. How many passed pastures in coming to school? (Hands raised.) Mary, can you tell me what a pasture is?

Mary. It is a field where the cattle, horses and sheep stay.

T. Why are they in the pasture?

Mary. We drive them there to eat the grass.

T. Do they need anything but food during the day?

Children. They want drink too.

T. Very well. Where do they find drink?

James. There is a creek in our pasture.

Sarah. There is a spring in ours.

T. (Charles's hand is raised.) Well, Charles, what is it?

Chas. I saw a big crab in the creek when I was coming to school.

T. I thought somebody would remember presently that there is a creek to be passed on the way to school. I am glad Charles has thought of it, though it seems he thought most of the crab. I want to talk of the creek presently. Sarah may tell us first what she means by a *spring*.

Sarah. It is a place where the water comes out of the ground.

T. Has any one else seen a spring? (Hands raised.) Can Charles tell me anything more about a spring?

Chas. There is a creek running from our spring.

T. James says there is a creek in his pasture.

Chas. (Interrupting.) That's the very same creek that goes from our spring.

T. Now will one of you tell me what a creek is, or how it is different from a spring, since both are water?

James. The creek is where the water runs along through the fields, but the spring is just the place where it comes out of the ground.

T. Does the water run, James? Can't you think of a better word?

James. It flows.

T. That is better. Now I should not say that a creek is *where* the water flows through the fields, but *is water flowing through the fields*. Can any one give me another name for a creek?

Fanny. Some people call it a brook.

T. I like that name better, though most people about here say *creek* instead of brook. Can any one tell me where the little brook that flows through the pasture goes?

George. It goes into the big creek that makes our mill-pond?

Chas. That's Salmon Creek.

T. Does any one know of any other brooks that flow into the "big creek" as George calls it? (Several are named.) Now can any one give me another name than creek for this large stream of water that has so many brooks flowing into it?

Susan. Johnny Brown called it a river. He lives in Albany, and he said there was a river there big enough for ships and steamboats to sail on.

T. Johnny called it a river because he had only seen such large streams as are called rivers. You call it a creek because you only know of such small streams as are called brooks or creeks. So we have three different names for streams of water. One of these days we shall learn something about rivers. George, will you tell us how Salmon Creek makes your mill-pond?

George. Father built a dam right across the creek, so the water was stopped from flowing; and it filled up behind the dam, and spread out wide and deep, and kept

getting larger and larger, until it came up to the top of the dam. Now it pours over all the time, and doesn't get any fuller.

T. George has told us that very nicely. One of these days we shall learn about something that is very like the mill-pond, only a great deal larger, yet nobody ever built a dam to make it.

Fanny. I know what you mean—it is a lake.

T. Now we will talk of some of the other things you have seen. John said he saw a meadow. How many others passed meadows on your way to school? (Hands raised.) John, tell us what you mean by a meadow?

John. It is a field full of grass.

T. The pasture was a field full of grass too, was it not? Are a meadow and a pasture the same thing?

Chas. The cattle eat the grass in the pasture, but the grass in the meadow is mowed and made into hay.

John. (Interrupting.) The cattle eat the hay too, don't they?

T. John should not interrupt. We know that the cattle eat the hay, but what Charles means is that they are not allowed to eat the fresh grass as fast as it grows in the meadow, as they do in the pasture. Let us try to find some other difference. When you look over the pasture, and then over the meadow, can you see any difference in the land itself?

Mary. Our pasture is a great deal rougher than our meadows.

George. Our pasture isn't rough, but it is swampy.

T. Why do you say yours is rough, Mary?

Mary. There are hills all over it and there aren't any in the meadow, only little bits of knolls.

T. But what do you mean by the hills?

Mary. (After thinking a moment.) When the ground is a great deal higher than the rest we call it a hill, and where there are a great many hills we say the land is rough or hilly.

T. That is well said. What do you say of land that, like the meadow, has no large hills?

James. We say it is level land.

T. When you read about level lands like

the meadow you will see them called *plains*. One of these days we shall learn something about a plain. Who has seen other hills than those in Mary's pasture?

Chas. I saw some awful high hills the other day when I was going to Ithaca with father and Uncle George, but uncle said they "wan't nothing" to what you see in New Hampshire, where he lives. He said there were some there so high that if you were on top of them you'd see sometimes the clouds, and thunder, and lightning under your feet, and where you are the sun would be shining. He calls them *mountains*.

T. That is very interesting, and we shall some time learn about those not "awful" but very high hills that are called *mountains*. Now we want to talk only of what we have seen. George says his pasture is *swampy*. What do you mean by that, George?

George. The ground is all wet and muddy, and little bunches of grass grow all over it; but you can't very well go across it for the ground is so soft that if you happen to step off the grass you will sink knee-deep in the mud. I got stuck in it the other night when I went after the cows.

T. But how do the cattle get along?

George. Oh! the pasture an't all swamp, and the cattle know where to go; and besides they don't care if they do get in the mud.

T. That word "an't" is not a very good one. I should say "is not" instead. Does any one know any other name for a *swamp*?

Mary. Some people call it a *marsh*.

T. Do you know, George, why your father takes that swampy land for a pasture, instead of planting corn or having a meadow there?

George. Father says the ground is so *awful* wet,—(class laugh)—so *very* wet, that he can't do anything else with it; and he says he is going to have some ditches dug to "run" the water off, and then next spring he will plough it up.

T. Do you know, Mary, why your father does not make use of his level fields for pastures instead of that hilly one?

Mary. We have some level fields that were pastures last year, but they are corn-

fields this summer. I asked father why he didn't plough that one too, and he said it is so rough and stony that it is not good for anything but pasture, but the cattle can get enough to eat and so he lets them run there every year; but he ploughs up the level pastures sometimes and plants corn and potatoes on them.

T. We have now talked as long as our time will allow. To-morrow we shall talk of the woods and other things you have seen this morning. Try to see something more when coming to school to-morrow. Who can tell me everything we have been learning in this lesson? (Hands raised.) Fanny may try.

Fanny. We have learned about pastures, and brooks, and a spring; and hills and meadows, and a swamp.

T. Now I would like to see the hand of every one who can tell me what each is, and where we may find some of each.

We observe that in the foregoing lesson nothing has been told the children, nothing learned by them *by rote*, but they have become conscious that they possess a knowledge of certain things, acquired by the use of their own powers of observation; and thus have their attention awakened for future observations and the path to knowledge opened to them. We also find in this simple lesson on a few of the objects accessible in the least varied neighborhood, the basis for the future idea of rivers, lakes, mountains, and plains; and in the use of the rougher and poorer lands for pasturing, but the better for culture, the germ for the future perception of the relation of the physical features of a region to the industries of its people. There still remain to be given lessons on the woodlands, or "woods" as the children call them, in which a little definition would be obtained by comparing them with an orchard as the meadow was compared with the pasture; and they would be noticed by the children as the home for certain animals, and afterward their uses to us found by them. In the same manner there would follow a second lesson on brooks in which the animals living in the water are noticed, and the uses of brooks to us obtained. In many neighborhoods there will be found in addition

to these physical forms, various others, as little waterfalls, valleys, etc. All should be noticed.

II. *The Industries of the Locality.*—The lessons on the physical geography of the locality would be followed by lessons on the industries of its people, thus presenting a simple idea of the conditions of civilized life. The following lesson will serve to suggest the proper manner of carrying on these conversations.

Teacher. We have now had a number of lessons in which we have been learning about the lands, and the waters, the plants, and animals around us. Can you remember anything which we see every day and many times in the day which we have not yet talked about.

Children. Houses, fences, roads, etc.

T. You have none of you named what I was thinking of, but I think you will find it soon. What are houses for?

Children. For people to live in.

James. We haven't talked about people yet!

T. That is just what I want to talk about to-day. Why don't people live in the fields like the horses and cattle, or in the woods like the birds and animals?

Chas. They would be out in all the storms and cold, and maybe they would get sick.

Fanny. They wouldn't have any place to keep their clothes, and their food, books, and other things in, and they would all be spoiled.

T. Now can any one tell me why people build houses to live in?

John. (After thinking a moment.) To shelter them from the storms and cold, and keep their goods safe.

T. We have now found that people need shelter, and therefore they build houses. Do we need anything besides shelter? Suppose you each had a large fine house to shelter you and had nothing in the world else. Do you think you would be very comfortable?

Chas. We should starve if we did not have something to eat.

Susan. We would want clothes to wear.

Fanny. We would want beds to sleep in.

Children. And tables, and chairs, and dishes.

T. Let us talk about the food first. Where does our food come from?

James. Father raises corn, and wheat, and potatoes, in the summer; and in the winter he fattens hogs and kills them for pork, and sometimes he kills a cow for beef, and sometimes a sheep for mutton.

T. Where does your father get the hogs, and cows, and sheep?

James. He raises them on the farm.

T. What do you mean by the farm?

James. I mean father's land, where he raises his crops, and his cattle, and sheep, and horses, and pigs.

T. That is very well. Now can some one tell me what people are called who, like James's father, have farms, and spend their time taking care of them and raising things upon them, and what their work is called?

Chas. They are farmers, and such work is called farming.

T. Then it is by farming that the farmers get their food. You said we wanted clothing too. How are the farmers to get that?

Susan. Mother spins wool and makes it into clothes.

T. But are the clothes we wear on a hot summer day like this, made of wool?

Mary. No, they are cotton.

T. Where does your mother get the cotton cloth?

Marg. She buys it at the store with butter and eggs.

T. Now try to remember everything you have at home that your father and mother can not raise nor make on the farm but must buy. (Sugar, furniture, books, etc., are named.) How do your father and mother pay for these?

John. Father always has a "great lot" of wheat and corn, more than we want, and he sells what he has to spare, and has the money to buy other things with.

Chas. And my father sells "lots" of wool, and some cows, and horses every year. That is the way he got money to build our new house.

T. Then it is by farming, that the farmers get not only food but their clothing and all their living. Now can you think of any one who gets a living in any other way?

John. Mr. Brown makes shoes.

James. Mr. Gray has a saw-mill, and he buys logs from the farmers' woods and saws them into lumber and sells the lumber. And sometimes he makes lumber for the farmers, and they pay him for it.

George. My father has a grist-mill, and he "grinds" for the farmers, and they pay him in flour; and sometimes he buys what wheat they have to spare, and grinds it and packs the flour into barrels and sells it.

(Other examples of manufacturing people are given, as the blacksmith, the cloth-dresser, the cabinetmaker, etc.)

T. We have then quite a number of people about us who are not farmers, but spend all their time *making* articles of different kinds out of things which they buy from the farmers or other people. How do they get their food?

James. They sell some of the things they make to the farmers, who don't have time to make them for themselves, and then the farmers sell them the things they want.

T. Here then is a second way of getting a living, that is, by *making things* and selling them to other people who can't well make them for themselves. Can you recollect any one who gets a living in still another way?

George. Mr. Shaw keeps a store. He buys goods in the city and brings them here and sells them to the farmers and the village people.

John. Mr. Smith has a stone-quarry where he gets large nice stones, such as they cover the road-sides with in the village.

These two ideas discussed in a manner similar to that of manufacturing, will make the children acquainted with a simple phase of the two other great resources by which the material wants of civilized life are supplied, that is, mining and commerce.

Then a little talk about the work of the schoolroom, and of the church, will present to their minds another class of wants, the supplying of which affords a livelihood to another class of persons. Now a little talk about the Constable and Justice of the Peace of the neighborhood, whom all country children know to be employed in keeping disorderly people in order, will give them a first glimpse of a system of government that controls all the people

just as the rules of school control the scholar.

There will, therefore, be found here in these simple things, with which the children are just as familiar as with the faces of their companions, the means for the future illustration of the whole organization of civilized society,—that is, a division of labor in the great business of supplying our bodily wants, provision for intellectual and moral culture, and a system of government controlling and directing all things for the greatest good of every class of the people.

III. Position and Distance.—After these lessons on the country, in the midst of which the children live, there would follow lessons in which they are taught to determine the cardinal and semi-cardinal points of the horizon, by reference to the rising and setting sun. This should be applied by them in determining the direction of each home from the school, and if the teacher desire, of the several homes from each of those nearest it.

Next would be lessons on extent, in which they are taught to recognize and draw the inch, the foot, and the yard, and for practice find the several horizontal dimensions of the schoolroom, and its surrounding lot, the length, breadth, and height of articles of the schoolroom furniture; the distance of the fixed pieces from each other, and from the walls, etc.; the width of doors and windows, and their distance from each other, and the corners near them. The mile, half mile and quarter mile, they will learn approximately by ascertaining the distances of their homes from school. It is desirable that they should, if practicable, learn it absolutely by actual measurement, and thus have a correct standard to which to refer distances that may be given them in future study. These lessons on the points of compass and on extent are necessary as a preparation for the maps they are now to construct.

IV. Maps.—The first idea of a map should be given by drawing the schoolroom. The children have, as will be perceived, all the data necessary, that is, they know the size of the room, and the position of all its furniture, and the size and position of its doors and windows. They

have but to determine upon a scale, the need of which they will see from the impossibility of making the map the size of the room; to be told that the north side is to be placed at the top of the map, etc., and they can commence work. As the map of the neighborhood or school-district is a little more difficult, the following may be of value in indicating the manner in which such a lesson is given.

T. Now that we have learned all about the forms of the land around us, and the position of the buildings, the streams and other things, we will draw upon the board a map that shall show how they are all placed together. In drawing the map of our schoolroom, we found the length and the width of the room by measuring it, and then we drew one inch in length and width on the map for every foot in the room. Let us find how large a country we are to map now. Who lives furthest from the school on the north? (Hands raised.) How far to your home, Mary?

Mary. One mile.

T. Who lives furthest on the south? How far to your home, John?

John. A mile and a half.

T. How far then from Mary's home to John's?

Children. Two miles and a half.

T. Now there are very many feet in every mile. Do you think we shall be able to draw one inch for every foot in this map? That would be impossible. We will draw instead only one foot for every mile. What then will stand for half a mile? What for a quarter? Our school district does not have walls to begin with, as the school-house has, but it has roads on each side of it, and several crossing it, which will answer just as well; for when we have these we can easily put the houses in their place beside them. In what direction does this road that passes the schoolhouse extend?

Children. North and south.

T. Mary lives one mile north from the school. How long then, and on which side of this mark, which I place for the school-house, shall I draw the line for the road?

Children. Draw it one foot toward the top of the board.

T. Now I have drawn it. On which side of it is your house, Mary? Here is the

mark for the house. John, will you tell me how to draw the road to your house?

John. It goes south just a little way, just a few yards, then ends, and I go on the State road east about the same distance, and then another road goes straight south to our house.

T. Then how long am I to draw that south road?

John. A foot and a half, for the little turns don't count anything in a mile and a half.

The road was then drawn, and the house located as before. In the same way was found the greatest distance to be drawn on the State road to the east, and to the west; then the position and length of the little cross-roads leading off from each. This being done, the point at which the several little streams crossed the roads was given by the children most familiar with each. Then the children living between the schoolhouse and these extremes, located their homes; then the public buildings of the neighborhood, the inn, church, post-office, etc., were located at the proper distance from the school-house. Then followed the little groves belonging to each farm, the marshes, etc., the map produced giving with tolerable correctness the topography of the district.

The children may now be encouraged to make at home, under the direction of their parents, maps of the farms on which they live. This will not only have the advantage of giving to the children additional practice of a pleasing kind, but it will also please their parents, and awaken in them an interest in the work of the school. The great value of these exercises, in a geographical point of view, is the practice they give in determining relative positions, in the comparison and estimation of distances, and in the constant association of the map with the region represented, which is as we have seen so essential to the correct use of the map in future. When a habit of accuracy in these respects is thoroughly formed, a great step is taken in preparation for the future systematic course of geography. The child has now obtained all his own locality has to give him, and may enter on his journeys, being prepared to derive the greatest possible benefit from them.

VENTILATING AND WARMING.

II.

WARMING.

FOR the warming of rooms, artificial heat may be derived from radiation, as in the open fireplace; from convection, as in hot-air furnaces; or from radiation and convection combined, as in stoves, hot-water and steam apparatus. In connection with each of these, important economical and sanitary questions are to be considered.

The most ancient of all methods is that of the open fireplace, which warms the apartment by simple radiation. Besides its genial and cheerful appearance, it possesses unrivaled advantages for ventilation; for the warm surface of the fire attracts air from the room and draws it up the chimney. The chief defect of this method is the lack of economy, involving, as it does, an astonishing waste of fuel. In the original form, that of a grate or fireplace set in the wall, 80 (Silliman) or 90 per cent. (Draper and Rumford) of all the heat evolved escapes into the chimney and is lost, while none reaches the apartment except that which is radiated from the coals and the heated wall. To a considerable extent this defect was remedied by Dr. Franklin, who introduced large wood-burning stoves, resembling the open fireplace in shape, which he connected with the chimney by long and circuitous pipes, whereby he increased the available heat. This "Franklin" stove has been adapted to coal-burning in what is called the "Forest Grate." This method of warming is objectionable, because it warms only one side of the person, the heat being radiant, not conveyed. Draughts are likely to arise, which, if checked, may cause the chimney to smoke. The stove form is liable to objections which will be considered in another connection. With all its defects, the open fireplace is nevertheless the most healthful, and as the air is always cool and fresh, is well fitted for apartments for mental operations.

The economical defects of the open fireplace were so glaring and irremediable,

that early in the present century efforts were made to replace it by other means. The first attempted improvement was that of warming by means of air previously passed over red-hot iron plates. The economical advantage over the fireplace was very great, but was counterbalanced by the injury to health. In the London Custom House, where the system was first employed, the health of the officers and the *employés* failed to such an alarming extent that after a very short trial the experiment was given up as a total failure. Alterations were afterwards made, which reduced the deleterious effects, though, as proved by many deplorable results, they did not altogether remove them. In hot-air furnaces, as now constructed, the air, admitted from without through openings in the wall, is warmed by being passed over metallic plates raised to a temperature of about 400° F. On the score of economy, this method possesses great advantages, although, as will be shown, it also involves a great waste of fuel. Of all the systems used, it is the most scientific; for by the register a supply of fresh, and, theoretically, pure air, continually flows into the room. Unfortunately, this advantage is merely theoretical, not practical, and the whole method is open to fatal objections.

The air introduced by the register varies in temperature from 150° to 250° F., being therefore frequently warmer than boiling water. Such a degree is of course unnecessary and injurious. As the heated air is specifically lighter than that previously in the room, it rises immediately to the ceiling, and if means have been provided for its escape, it passes out. If it is confined, the temperature of the room soon reaches a point which renders the air unfitted for respiration. In each case, then, there is a waste of fuel. The intense heat of the incoming air defeats the advantage of ventilation which theoretically should accrue from the use of these furnaces. The hot air rises and presses the impure and

cooler air to the lower part of the room, where it must be re-breathed. By the high temperature the air is desiccated, and sulphurous vapors are frequently driven off the iron plates: whatever organic matter may be present is charred, and an empyreumatic odor arises in the apartment. Another effect of excessive temperature is to destroy the ozone, which is essential to a proper condition of the atmosphere. This element is so valuable as a disinfectant that its absence tends fearfully to the increase of impurity. Extreme heat also so impairs the vitality of the air, that even the evaporation of water is ineffectual for its restoration. The total absence of radiant heat renders necessary for comfort a temperature several degrees higher than would otherwise be required.

When the failure of the hot-air apparatus in the London Custom House had demonstrated its inefficiency and injurious character, Dr. Arnott introduced enclosed stoves. In economy, these certainly excel all other means of warming. Dr. Arnott's stove consumed only six pounds of Welch anthracite coal per day, and gave off heat enough for the coldest weather. But economy is the only redeeming quality in it. To use the words of Dr. Draper, "stoves are the vilest inventions ever conceived for the destruction of health; they possess all the defects, with none of the advantages of hot-air furnaces." Ventilation is unassisted, for the only means of egress for air is through the little opening below, which conveys not vitiated, but pure and cool air, which we should retain.

Heating by hot water conveyed in pipes was conceived by the Marquis de Chabannes and used by him in his English residence. It is advantageous; for water possesses such specific heat, that it can warm three thousand times its bulk of air while cooling only 1° from a temperature of 270° F. When the water is driven through under low pressure, this mode is not economical on a small scale, as very large pipes are required. When used under a high pressure of from seventy-five to six hundred and seventy-five pounds to the square inch, as in Perkins's apparatus, smaller pipes are required, and the method becomes more efficient. Heating by steam

on the same principle is in common use, and is economical. In the common steam and high-pressure water apparatus there is danger of explosion and fire from pressure and temperature. A better method of employing steam for heating purposes is found in Gold's "Radiators." This apparatus consists of two plates of japanned sheet-iron, joined together by rivets at the bottom, of concave depressions in the outer sheet, forming thereby a series of connected cells, into which steam is admitted at the extremely low pressure of one pound to the square inch. The water of condensation is returned to the boilers through the pipe by which steam is introduced. As the supply of steam can easily be regulated, any desirable degree of temperature may be attained and preserved.

Against all methods combining radiation and convection, serious objections may be urged. All are unscientific, as thorough ventilation without total depression of the temperature is impossible. In all, with the possible exception of Gold's "Radiators," the high temperature attained by the metal causes it to char and decompose such organic substances as may be in the air. The other objections urged against warming by hot air apply in most cases with equal force to this class, which have not even the theoretical advantage of assisting ventilation. The fatal effects upon the vital qualities of the atmosphere, resulting from contact with highly heated metallic surfaces, are readily shown by an experiment recorded in the Philosophical Transactions of the Royal Society (Eng.). A quantity of air, caused to pass and re-pass through a number of highly-heated metallic pipes, was collected in a receiver and allowed to cool. In it the experimenter placed a cat, which was immediately seized with convulsions, and in a minute fell apparently dead. Upon being brought into the open air the animal recovered very slowly. There can be no doubt that the shortening period of life, so marked within the last fifty years, is in great measure owing to the extensive use of closed stoves. Dr. Ure, in his report upon this subject, gives us his conviction, that air, thus warmed, cannot act continuously upon human beings without impairing their constitutions and

shortening the duration of their lives. It is the opinion of Florence Nightingale, that air from heated metallic substances tends to the production of lung diseases.

A new method of warming has been proposed by Mr. E. T. Robbins, which is based upon a correct application of scientific principles. If it prove as successful in practice as it is beautiful in theory, we must concede that a long step has been taken toward a solution of the problems of warming and ventilating. In this apparatus the heat is generated in a structure built principally of brick or tile, and avoids metallic surfaces. The hot air is not thrown directly into the room, but by circulating beneath is made to warm the floor, which, or such portions as are especially to be heated, is made of tile or steatite. This material is so poor a conductor of heat that the temperature can not rise to an unpleasant degree. By an arrangement in the outer portion of the heat-generating apparatus below, air is drawn from without and brought into the rooms at the healthful temperature of 70° F. The peculiar advantages of this method are, that the lower portions of the room are kept

warm; deleterious draughts cannot occur; the decomposition of animal substances is avoided, and the introduction of soot or devitalized air into the apartment is readily and absolutely prevented. Theoretically, Mr. Robbins's apparatus is all that can be desired. The system of ventilation is similar to the action of hot-air furnaces, but is free from the danger of injurious effects. As, however, we have been unable to see the apparatus in action, we feel hardly at liberty to give an absolute recommendation.

Having thus discussed the merits of the various systems, the question arises, Which is best fitted for schools? For a small building, such as most of our country school-houses, nothing can equal the open fireplace. This, it is true, is expensive, but the waste is not so excessive as to bear any weight in the scale against health and clearness of mental conception, or to excuse the substitution of stoves. For larger buildings, more economical means are required, and one of the more complicated systems must be adopted. Which of these should be accepted, we will not assume to decide.

THE UNFINISHED PROBLEMS OF THE UNIVERSE.*

II.

THE MOVEMENT OF THE STELLAR UNIVERSE.

ASTRONOMERS adopt the theory that our solar system is sweeping with tremendous velocity through space, and moving at such a rate that it passes over one hundred and fifty-four millions of miles every year.

Up to the present time no one has ventured to say what the character of this motion is. We are moving toward a certain point, and that point is only approximately known. Are we moving in some mighty curve? Are we moving in some vast circle? Are we sweeping in some tremendous ellipse? or are we moving in

a simple right line toward the point whither the sun is urging his flight? If the sun is indeed moving in any vast circumference, as soon as we can get a portion of its mighty curve sufficient to determine the plane in which it lies, then somewhere in that plane, in the depths of space, will be found the mighty centre about which the sun and solar system are revolving.

Up to this time, however, we have no knowledge on the subject. All we can say is this, that if this (illustrating) be the direction in which the sun is moving, and perpendicular to this line we describe a plane entirely around the heavens, cutting from the solar sphere a circle, somewhere in that mighty circle will be found the centre about which the sun is revolving.

* By the late Prof. O. M. Mitchell, in *Pulpit and Rostrum*, No. 3, published by Schermerhorn, Bancroft & Co.

Within a comparatively short time the attention of astronomers has been directed to an investigation with which this is specifically combined, and it is nothing more nor less than this grand question: Is there, in the whole starry heavens by which we are surrounded, any great central body, any mighty controlling orb, which holds a proportion to the bodies by which it is surrounded, such as our central sun holds to the planets which sweep around it? Looking at our own system, and supposing this was by possibility a sort of picture hung up in the heavens on a miniature scale, in order that there might be realized in the starry firmament with which we are allied another mightier system, of which all the stars should constitute the sweeping planets, and in the centre of the whole some grand controlling orb, magnificent in its proportions, grand in the quantity of matter which it contains, vast in its outline and circumference, and sufficient to hold these mighty worlds and to produce harmonious and perfect movement throughout the Stellar Universe—is there such an orb existing in space? I answer, there is not. Why? Because we are enabled by the telescope to penetrate space in every possible direction. Ah!—you may answer—but you can only bring into your telescope the light that comes from luminous bodies, and if this vast central orb is non-luminous, your telescope fails, and you can accomplish nothing; and when you state that such a body does not exist, you state what you do not know.

There is another method by which we may acquire a knowledge of the facts in this case. If it is true that this mighty orb exists in space somewhere, surrounded by all these glittering stars, even if it be opaque, and sends to us no light, if it has the attractive power which belongs to our own sun, and if it be energized by this mighty power of universal gravitation which holds these starry worlds in its grasp, then we are enabled by means of the telescope to detect that fact; because in the immediate vicinity of this central body the stars will sweep more rapidly under its gigantic power than those at a greater and still greater distance—just as the planets nearest to our sun revolve with greater

velocity than those which are more remote.

Now we have examined the whole starry heavens, we have mapped out these heavens, and located these stars. We know where they were at the beginning of this century; we know where they are now. We know the amount of change which has taken place, and in case there was one region in which stars are more rapidly moving than in another, we have a sufficient knowledge of the heavens to detect this point in space. We are therefore enabled to pronounce that such a mighty central orb does not exist anywhere throughout the universe of fixed stars with which we are allied.

There being no such body, you may of course conclude that there can be no revolution around a centre. That does not follow. Let me tell you why.

A few years only have passed away since an astronomer commenced the examination of what are called "double stars." Sir William Herschel is again the pioneer in this field of investigation, and he tells us that when he began he gathered from all the catalogues of which he had any knowledge a list of all "double stars" then known. I think the list consisted of about five. It has since rapidly increased. He himself ran it up to hundreds; his son, who succeeded him, ran it up to thousands. After a while Struve, who had charge of the great refractor at Dorpat, gave his whole observing energy to this one department of the heavens, and the result has been that he has published a catalogue, in some sense, almost without number, of these double stars, which exist strewn richly throughout the regions of space.

Now, we find, after a rigorous examination of these double stars, that it is utterly impossible for us to suppose that they are optically united, that they are accidentally so located in space that they are so close together as to give the appearance of union; and when we come to apply what is called the calculus of probabilities, we find a limit within which this possible optical appearance may occur, and everything beyond or inside of this limit must be a physical union. The stars are not merely accidentally located in this way; they are

combined, the one with the other, each energized by the power of gravitation, and the two revolving about their common center of gravity. Now, this announcement which I make, extraordinary as it may appear to those who have not hitherto investigated it, has been fully carried out and verified by observation. We trace these revolving suns in their orbits until, under the gaze of man, some of them have performed entire revolutions. Many others are far advanced. Astronomers have gone yet further, and, applying the great law of gravitation and the laws of motion, have actually predicted their periods—have given us an ephemeris which should mark the place of these bodies in coming time, and these predictions have been verified: so that we have these revolving orbs scattered throughout the heavens; some rapidly sweeping through space in periods shorter than the periods or revolutions of our own planetary orbs; others rising in grandeur and magnificence until we find their periods reaching by possibility millions of years.

Let me call your attention to a single example. There is a quadruple star in the constellation Lyra—two double stars—the periods of which have been determined comparatively, and we find that one double set is revolving in this manner about the other—all of them sweeping through space and performing this mighty revolution in a period of not less than a million of our years. But you may ask me, how is it possible to decide such a question as this—how can it be done? First, we announce that these bodies are physically united, from the fact that they are all moving together in one common direction, with one equal velocity through space. I do not refer now to their movements or revolution about each other. I refer to a common proper motion, a sort of tie carrying these bodies off bodily together. It is utterly impossible that they should be thus carried off together unless they were physically united. They make up a mighty system, and when we come to measure the distance by which these bodies are severed, it is possible to determine roughly the period of revolution which must by necessity make up the vast time which is required

for them to sweep entirely around. Thus we find that there is a diversity in the constitution of this universe, such as we find surrounding us everywhere upon the face of the planet that we inhabit. We may anticipate, therefore, schemes and systems rising one above another, each as diverse from the other as are the planets and animals that grace, dignify, and beautify the earth. So it is in the heavens. Here we have bodies of all possible kinds and characters.

If we take the telescope and look out upon the universes by which we are surrounded, we find them diversified in every possible way. Our own mighty Stellar System takes upon itself the form of a flat disk, which may be compared to a mighty ring breaking out into two branches, severed from each other, the interior with stars less densely populous than upon the exterior.

But take the telescope and go beyond this; and here you find, coming out from the depths of space, universes of every possible shape and fashion; some of them assuming a globular form—and, when we apply the highest possible penetrating power of the telescope, breaking into ten thousand brilliant stars, all crushed and condensed into one luminous, bright, and magnificent center.

But look yet further. Away yonder, in the distance, you behold a faint, hazy, nebulous ring of light, the interior almost entirely dark, but the exterior ring shaped and exhibiting to the eye, under the most powerful telescope, the fact that it may be resolved entirely into stars, producing a universe somewhat analogous to the one we inhabit. Go yet deeper into space, and there you will behold another universe—voluminous scrolls of light, glittering with beauty, flashing with splendor, and sweeping a curve of most extraordinary form and of most tremendous outlines. What is the meaning of all this? Nothing but the diversity with which the Almighty Architect has chosen to mark the superstructure by which we are surrounded. So that we may anticipate all the diversity that exists here on the earth and in the heavens beyond us, in the system with which we are allied.

A DAY IN AN ENGLISH BOARDING-SCHOOL.

THE Reverend Anthony F. Thomson, of Lincoln College, Oxford, late Head-Master of St. John's Foundation School, London, gives us a graphic account of a day in a "driving school," which we present in nearly his own words. The "driving school" is an establishment very much admired in England, and well patronized by certain classes of parents who care for nothing but what is there called "cramping." We know of some American Boarding-schools, not altogether unlike this peculiar English Boarding-school, with its "driving" facilities.

The boys or girls—for the day is pretty much the same in either case—rise at six o'clock. After a hurried toilet, scrambled through in order to get down for roll-call, a rush is made for the school-room. When arrived there, the roll is called by the usher, and "tasks" are instantly assigned, if not something more striking, to the unhappy wight who, not being strong enough to secure a basin in his dormitory, from want of water, or a towel, or some such cause, comes down either late or untidy. Then comes a hurried prayer, read either by the principal or an usher—most commonly by the latter. This done, and it rarely takes three minutes, there is a scramble for books, pen, ink, etc. The usher's voice predominates over the noise of the mob of pupils, and in about a quarter of an hour order is supposed to be established. Then enters the principal, or more commonly the vice-principal, as it is now the fashion to call the senior usher, and his class is summoned. The vice-principal is drowsy, is very cross, cold, and consequently harsh. The class is cold, half-awake, consequently very stupid. Jones, the *bête-noire* of the driving school, is discovered to know nothing, to have learned nothing, to care for nothing, especially about his lessons. The vice-principal waxes wroth, particularly as the other ushers are all hearing their classes at the same time, and the din is intolerable. All the ushers, following suit, then commence to wax wroth. Tyrannical and absurd tasks are set, perhaps two or three sound

boxes on the ear are distributed, and the school calms down into sheer sullenness—complains of cold, numb fingers, no time to learn lessons, etc. The ushers go on in despair, "driving," that is, getting through as much as they possibly can—no matter how; when about eight o'clock the principal appears, a stern man, who wishes to know "what has been done this morning?" The real answer would be "next to nothing;" but the books are exhibited, the tasks recounted, Jones "had up," reprimanded, perhaps incontinently caned. Eight o'clock strikes—books, slates, everything goes flying. Principal, vice-principal, and ushers disappear to their private breakfast, and the boys rush like wild hounds to theirs. This meal gulped down, without order, decency, or reserve of any kind, a rush is made to the playground, the little boys being knocked down in the "burst," or found crying, because they have had their allowance of bread and butter forcibly taken away by Jones, whose tasks and canings, though numberless, only make him as ferocious out of school as he is dull in it.

At a little before nine, the day-boys arrive, laden with slyly-purchased dainties, on which they have a considerable premium, and during the dispensing whereof they unbosom their minds of all the trivial gossip of the town, in return for which they receive distorted and exaggerated accounts of the school, the principal, the ushers, and, from the little boys, of "that beast" Jones. At nine the school-bell rings; all rush into school for another roll-call. Then comes more scramble, more tasks, more din, until the classes are formed, and the driving begins again. Long before twelve a general yawn seems to pervade the whole establishment; the boys get uneasy on their seats; the clock is carefully eyed—every minute counted; the ushers feel that even *they* cannot drive any more into, or get any more out of, the boys. Twelve strikes; again the general rush—Jones escaping in the *mêlée* until forcibly reclaimed from the playground by the junior usher, who is responsible for

the tasks to the principal. Jones is brought back to the heated, dirty school-room, where he is confined till dinner-time with a dozen other desperate offenders like himself, each with an almost impossible task before him, half of which must, they all well know, be "let off." Should the poor usher turn his head for a moment, Jones and the incorrigibles rush at one another, battles commence, books are thrown about, ink spilled. The usher in despair collars Jones, and is about to drag him to the principal, when one o'clock strikes. Off steam Jones and the incorrigibles. Then comes a rush for the few basins and the jack-towel in the so-called lavatory—pocket-combs and scraps of looking-glass being in great requisition. The dinner-bell rings—in rush the wild hounds again—struggles for places in proximity to the ushers, who are supposed to be liberal dispensers of food, and away from Mrs. Principal, who is known to be "mean," are the order of the day. A scant grace, heavy pudding, before inferior meat, though this latter is brought in ostentatiously in huge joints, and is consequently half raw, form the "unlimited diet," which is washed down with very poor thin beer, infinitely inferior to good spring-water. There is no after grace; as each boy completes his meal—the strong and active gorging, the weak and timid bolting their food—they rush away from the table, and for a brief half-hour are their own masters.

At two o'clock, again the school-bell. Foreign masters arriving, the principal does not reappear, and school goes drearily on till four, the vice-principal being in command; as the ushers are engaged chiefly in giving lessons in writing and arithmetic, the school enjoys a comparative rest—Jones going to sleep, the elder boys being comparatively idle (the "foreigners" being bad disciplinarians), while the little boys are kept awake by raps on the knuckles with the ruler, or an occasional box on the ear from the vice-principal, who, having authority, thinks it proper to use it freely. Just as school ends, at four o'clock, Jones incautiously snores, when he is discovered by the vice-principal, who forthwith canes him, and with interest, having in memory Jones's matutinal iniquities.

Then comes the rush out—again the "keeping in"—the poor junior usher, upon whom this department devolves, pining for fresh air and quiet—the day-boys receiving their commissions, and carrying off the day's scandal. At five o'clock, tea—after the fashion of breakfast; at six, school again—this time with the addition of the principal, who, freshened up by his afternoon's rest, and, perhaps, nap, thinks every one ought to be in equal trim. For two full hours he *does* "drive" boys, ushers, vice-principal, and all. At eight, half the little boys being asleep, notwithstanding the driving, the boys go wearily to bed, the parlor boarders having an hour "extra." The poor usher goes the round of the dormitories, chases some into bed, hears a host of minor complaints from others, suppresses three or four combats, and puts out the gas. After much noise, some singing, infinite chatter, the school drops off to sleep; Jones vowing to be "revenged" on all and sundry when he goes home, meantime coolly plundering a "new" boy's store, who, awed at Jones's might, meekly and servilely gives himself up to be plundered. In the midst, however, of Jones's glee, the vice principal drops in, seizes Jones, and threatens immediate castigation, but to save trouble sees him safe into bed, with awful menaces as to the coming dawn, and then joins the little party of worn-out ushers in the "master's room" at cards, bad cigars, gin and water, and general discontent.

Such is no exaggerated account of a pupil's day at a "driving" private school, where *work* is really *meant* to be done, and where the principal conscientiously strives to make his pupils work, and believes they are "advancing." No doubt there are some among the number of pupils, who, notwithstanding all the drawbacks, do improve, and on them the school hangs together; and looking at the wretched waste of time, temper, and ability in most schools, it is no wonder that the driving *does answer*, and that the principal finds that, term by term, his numbers increase, and he gets continual drafts from other places where equal amounts of confusion and mismanagement prevail, but with the substitution of indifference, laziness,

ness, or positive deception, for driving. But let any indifferent person examine the system a little keenly, and looking closely at the boys as they finally leave the school, consider their deplorable ignorance, as a mass, their wretched habits, almost total

immorality, and very often impaired health and dulled intellect, and he will plainly recognize the *real* end of the "driving school"—evidently a mercantile speculation under the guise of an instructional institution.

STRAY CHAPTERS BY AN OLD SCHOOLMASTER.

THE EXHIBITION.

FROM time immemorial it has been customary to close the terms of district schools with a grand exhibition, showing the proficiency of the pupils in such branches as they were supposed to study. The custom doubtless originated with some incompetent teacher, who, finding himself likely to end his time in disgrace and lose his prospect of making money during another winter unless something were done to retrieve his decaying fortunes, determined to have a grand "whitewashing" at the close of his term. In this way, perhaps, he hoped to blind the common-sense and excite the applause of his patrons, and thus secure from them "a strong certificate" of his thorough management. He must have proved successful, for he has had many imitators; and the "Exhibition" has become so fashionable that it proves a sad drawback to every honest teacher. Whether Mr. Williams, the teacher in H—, was the originator of this fashion I can not tell. Upon this subject the record is silent. He certainly introduced it into H—. As it was before unknown, the announcement and the novel preparations raised popular expectation to the highest pitch. For several weeks toward the close of the term the pupils were trained in elocution, studying dialogues and orations of the most difficult character and affording the widest range for declamatory ranting.

The long expected "Exhibition day" arrived. Everything seemed propitious. Smiles were on every face: even the usually fierce countenances of the trustees were beaming. Mr. Williams himself was in the best of spirits, and his crooked back

seemed to straighten up full ten degrees. The little Presbyterian church on the hill had been thoroughly swept and provided with a huge platform by the willing hands of the older boys. The people assembled from miles around. The appointed hour arrived. Mr. Williams was busily engaged in superintending the toilette of the young ladies ensconced behind a blanket shawl at one side of the platform, inclosing an area termed the ladies' dressing-room. He suddenly emerged on perceiving indications of an *émeute* on the opposite side, where, similarly screened from observation, the masculine forces of the school were reaching a pretty obvious condition of fermentation. His presence there seemed not to have a very soothing influence. In about a quarter of an hour, however, he reappeared with a somewhat florid countenance, his hand wrapped in a handkerchief. At a nod from Mr. Williams, the pastor of the congregation then took his place upon the stage with becoming dignity. After scanning the breathless audience for a few moments, he slowly arose and with grave voice announced that the meeting would be opened with prayer, which accordingly followed to the extent of thirty-five minutes. This over, a maiden of thirteen summers, possessing an extremely childish face and having a net weight of one hundred and fifty-eight pounds, read a formal invitation to the parents, etc. This was a piece of exquisite poetry, conceived by Mr. Williams, whose reputation as a poet was not exceeded by his renown as a teacher. The effect on this occasion was remarkable; it deserves reproduction. The primary intention was

to sing it in general chorus to the tune "Old Hundred," but this was abandoned because of some insuperable difficulties in the versification.

THE POEM.

Fathers, mothers, sisters all,
You have come here at our call;
So be easy with our faults
For our minds are full of halts.
Think of what we've overcome
To please the good "old folks at home."
Oh, how we tremble in each limb,
Lest our ways may not be trim.

If we tremble, falter, quiver,
Do not think us white of liver;
Place yourselves just in our place,
And see the kind just of the case.
You are old, and we are young,
In our ears these words have rung,
Driven in by our good teacher,
That excellent and true far-reacher.

We no nonsense here have learned,
But our hands have often burned
Because our thoughts have often roved,
And we foolish things have loved.
Here we've walked in learning's path,
Here we've trod the way of truth,
Here we've grasped at education,
The greatest bulwark of our nation.

Fathers, mothers, sisters dear,
We are grateful for your presence here;
And we hope you joy may feel,
And we hope it may be real.
Thus we greet you to our anniversary,
Better to you than your dairy.
Listen, and you'll something learn
Which will make you better men and women.

The effect of this specimen of rural poesy "can better be imagined than described." Mr. Flint complacently stroked his gigantic collar and turned toward his wife, who benignantly nodded her entire satisfaction. Mr. Brown, chairman of the trustees, sat two inches higher as he congratulated himself upon his extraordinary ability in selecting such a wonderful teacher as Mr. Williams. The good pastor could scarcely repress a smile at the decidedly original versification. While the continuity of thought displayed throughout the

poem so affected a young chap "fresh from college" that he irreverently gave way to boisterous mirth. The ladies were breathless with amazement at the power of the intellect which could conceive "such beautiful rhyme." Mr. Williams, alone unmoved, intently examined the programme. The poem was a marked success!

Next came three dialogues. With wonderful discretion Mr. Williams had arranged that these should require at least three-fourths of the older pupils. He had thus discounted all possibility of dissatisfaction or envy among the parents. The dialogues passed off well, being, according to the judgment of those whose children took part, very creditably performed. Music followed, which, when we take into consideration the instruction and the advantages enjoyed by the performers, was, like Lord Dundreary's joke, pretty good for them. Some untimely strictures were whispered by envious maidens of unknown age. This one was "stuck up" or that one "squeaked awfully," or some other one "stretched her neck too far," or some one's dress was too "low-necked" or in "awful taste." Time was given, that the equanimity of the audience might be restored; after which Mr. Williams begged leave to indulge in a brief dissertation upon schools. As no dissenting voice was heard, he proceeded to allude to the necessity of holding out inducements to children and the importance of accurate information concerning the three essentials, "reading, 'riting, and 'rithmetic." He inveighed fiercely against those ill-starred reformers who introduce new-fangled notions into schools, and regard grammar, spelling, and geography as equal in value to elegant reading. He was grateful that his time had not been wasted in attempts to acquire such useless knowledge. After ridiculing all such notions to his utmost satisfaction, he gave a brief account of the progress made by the school during the preceding term, and congratulated himself as well as his patrons upon the wonderful success attending his efforts. He concluded his address by thanking the parents for the efficient support they had rendered him in his labors, and hoped they would still extend the helping hand to his successor, whoever

he might be. The speaker's voice was somewhat husky, and showed that it had not yet fully recovered from the shock sustained at Mr. Flint's house.

The next step was a solo oration by Thomas Flint, who thereupon earnestly expatiated on the impropriety of expecting great things from one of his tender years, and gave the audience much valuable botanical knowledge, especially concerning the inscrutable tendency of insignificant acorns to become extremely significant oaks. He also stated that Alexander, Napoleon and they themselves (the audience, of course) were once children, from which premise he drew the startling conclusion that lambs and children should be carefully nurtured during infancy, because should they live they must inevitably become sheep and men. All of which was rendered to the utmost satisfaction of Mr. Flint and received great applause from the audience, who thought the piece "a wonderful thing for a boy of his age to make up."

The remaining exercises were of like character. It is unnecessary for me to particularize, lest I should seem to be biased in favor of some or prejudiced against others. Some curious exhibitions were made. Hamlet's soliloquy was eloquently rendered, so that the younger children hid their faces affrighted and the elder gaped in silent wonder; while the old folks trembled lest the excited orator should tear himself in pieces. The latter feeling, however, was totally uncalled for; the speaker's excitement was all "put on," for while he racked himself until he ached, he was invariably glorying in the majestic character of his performance. Pathetic renderings were given of several other

portions of Shakspeare, after which the exhibition was appropriately closed by the pastor, and the audience was dismissed.

Before the people had opportunity to retire, Mr. Brown, chairman of trustees, jumped to his feet, and in an excited voice requested the "folks" to remain, as he had something important "to motion." The folks remained, and the gentleman, unrolling a vast sheet of paper, read off a series of resolutions presenting great gratitude to Mr. Williams for his "laborious and successful labors during the past winter," and requesting him to accept the position for the following year. The resolutions were unanimously adopted, and the offer was immediately accepted by Mr. Williams in a neat little speech. The assemblage then dispersed.

The exhibition was a success. Of course it provoked some criticism; but this was to be expected. Mrs. Spence, whose marriageable daughter had not been chosen to sing, was thoroughly disgusted with the whole concern, and denounced it unsparingly as a "theatrical performance;" in all of which she was heartily seconded by Deacon Wiles, who during the progress of the exhibition had proffered her his heart and hand, as the only practicable means of securing an interest in the property to which she was an unavoidable appendage. I am happy to say that these were almost the only dissatisfied persons in the district. The majority were, to use the language of Mrs. Jones, who had recently returned from a visit to New York, "in a perfect ecstasy over the exhibition." The affair took so deep a hold upon the affections of the people that "exhibitions" have been customary in the town and the surrounding country to this day.

SCHOOL GOVERNMENT.

THERE is no subject in the education of youth so perplexing to the teacher, or on which his mind is so much exercised, as that of discipline.

One difficulty is, that no system ever devised has been suited to all schools—

primary or higher—large or small—of both sexes or exclusively of one—of all ages, ranks and classes. There is such diversity of dispositions, views and abilities, that it is difficult to decide upon a system of good discipline for all institutions.

In its present development, the human mind knows only two general principles of government, *rewards* and *punishments*, and hence all plans are reducible to these elements. We assume, in the first place, that a teacher must govern, if he governs well, by fear. We admit love to be a strong power too, but in the variety of temperaments which collect in schools, it is almost impossible to bring this influence to bear on all. We hold, then, that a teacher should so govern as to make his pupils afraid to do wrong, or, at least, to repeat a wrong. The great drawback to this with most instructors is, that they lack the necessary firmness and exactness. To govern a school aright involves much watchfulness, labor and self-denial; and teachers, like other men, sometimes love ease, and try to manage their schools as pleasantly, and with as little personal trouble as they can. Hence discipline becomes relaxed, and good order can not be fully maintained. Another difficulty is, that many of the offenses in school are in their nature essentially trivial, and are overlooked until their number makes disorder, and they gradually extend beyond the full control of the teacher.

To maintain discipline, we strongly advocate corporal punishment. This never entirely fails unless it has been neglected while the child was young, and only attempted after he has become accustomed to be self-willed. We know this theory has been much written against, and that a blow is more easily given than a reason for it; but we contend that this degree of severity, with strict justice in its execution, is the only means, after all, to secure really good and effectual discipline. We do not approve of constantly whipping—in fact, it should not be resorted to for trifling dereliction; nor do we approve of slight chastisements that only serve to enrage the offender: it should be sufficient to cow the insubordinate pupil, and never any more. This is the only just measure of the quantity of punishment. Again, an instructor should never be ready to *excuse* a violation of his rules, on the ground that it was unintentionally done. Nature never has excuses for unintentional offenses. If we place our hand on a hot stove the pain that follows

is not relaxed because we “didn’t go to do it;” but the punishment is always exactly in proportion to the violation of nature’s law; and this is the true mode of procedure in school government.

All misdemeanors of children are naturally of two classes—disobedience of forms or regulations for order, and grave offenses, such as malicious mischief, wilful lying, improper language, obstinate idleness, etc. These, and like offenses, should be met firmly. On the first occasion we would detain the offender after school-hours, admonish him in a short but positive manner, enter his name and the nature of the offense in a book kept for that and similar purposes. If a repetition should occur we would resort to corporal punishment, with enough severity to make a salutary impression.

For the minor misdemeanors we would have some punishment other than corporal. For instance, a boy drops his slate, making a noise that disturbs the school. He pleads that it was an accident. The teacher excuses him, and the consequence is, twenty slates, perhaps, fall within a week. Some slight but proper punishment, or forfeiture, should invariably follow *every* violation of the regulations; for, to say the least, it is carelessness, and this is a fault. “Atwater’s System,” consisting of “Merit-tickets,” is excellent. It makes *every* violation of rules subject to forfeiture of a “Merit,” by having the offender’s name registered. If to this were always added some restriction or additional punishment to suit the various grades of offenses or repetitions of them, nearly perfect order might be secured in any school.

Talking is a bad practice in school. It is often really necessary between pupils, and sometimes involves no interruption to others, if done in a whisper. Yet we would prohibit it altogether, unless by special permission. You can not maintain discipline without a rigid rule on this subject. Let every teacher carefully prepare a list of what must be done or avoided, and after due consideration affix a penalty for violating a regulation. Then, he must be firm on all occasions, to every one alike, rich or poor, large or small; accept no excuse, and carry out the prescribed punish-

ment in perfect evenness of temper, without allowing discussions. If the teacher sees the offense himself, he can decide promptly; if he does not see it he should give the accused the benefit of the doubt.

Always during school-hours the teacher should be in some respects a different personage from what he is at other times. He should not talk to his pupils except on matters pertaining to the school; he should maintain a dignified deportment, and never violate any of his own rules; he should be polite but not familiar, kind but firm. Out of school he may go with his pupils to the playground; show an interest in their sports; encourage all healthy exercise; train both sexes in Calisthenics. But we doubt the propriety of participating in a game of ball or marbles. It will not tend to advance his authority nor increase respect.

It is perplexing to decide when a lesson is sufficiently well recited to pass, and to establish a constant and uniform rule on the subject. We would suggest the following plan. Let your classes be of moderate size, arranged, if possible, strictly according to the abilities of the pupils. Assign no greater lesson to a class than you would to one pupil, and ask the questions without regard to the order of the text book. If any one can not give an intelligent and suitable answer to two or three questions, send him at once out of the class and require the lesson to be re-studied. To hear lessons over and over again is indeed wearisome; but firmness in this, as in

every other rule, will sooner or later greatly reduce the delinquencies. Corporal punishment may sometimes be necessary to induce a proper application to study.

We can not conclude without an allusion to the monitor system. This consists mainly in having some one of the larger boys on duty every day to register the names of offenders, with the offenses. The monitor can be called upon when necessary, as evidence, whenever the teacher may have doubt. All pupils so "put down," forfeit their mark or ticket of merit, as the system adopted may require, besides undergoing the special punishment prescribed. In large schools, monitors are indispensable to report misdemeanors.

Judicious punishments are generally of four kinds: 1. The use of the rod; 2. "Keeping in;" 3. Loss of merit-tickets or rewards; and, 4. Putting under censure, by which the offender loses for a time certain privileges, or suffers a reprimand, or has extra study. We are opposed to all punishments which expose a pupil to the ridicule of his companions,—such as putting on high stools; wearing a dunce cap; standing on one foot, or the like; striking the hand with a ruler; and, above all, constantly threatening and seldom performing, calling ugly names, or any ridicule of a pupil's appearance, clothes, religion, or country. In fine, a good teacher will be a gentleman in all his acts and expressions, calm, dignified and generous; but ever insisting on a quiet school and well-recited lessons.

NERVOUS TEACHERS.

I LIKE the EDUCATIONAL MONTHLY. It is alive; it is American, distinctively; it is devoted to two things—as many as can be successfully discussed and carried by one "Monthly." It lives; more, thrives; which shows that *progress* has been made.

More than this, while it *is* American, it is neither clannish nor are its suggestions drawn from one well, but it gathers of the good, the beautiful, the true, wherever

they may be found; and its writers show that they write for high purposes, from stand-points of enviable altitude, and say, by the spirit which breathes through each line, to all who read, "come up hither."

I notice, however, in an admirable paper on "The Health of Teachers," a sentence that to me seems not to harmonize with truth, and I wish to consider it a moment, that it may not hereafter be supported,

when questioned, by the allegation that the EDUCATIONAL MONTHLY had indorsed it. It is this: "And first comes the excessive nervous or mental strain, which a teacher is obliged to maintain in governing his pupils, and in imparting instruction." Not a bit of it, as to the governing! On this point teachers and schools are divided into two classes; those who govern, and who do not,—which are governed, and which are not. It is said, and truly, that Dr. Arnold "ruled by love." Now, the teacher who rules or governs by love, will *not* "be obliged to maintain" either an "excessive nervous or mental strain," and consequently will not from that cause find himself prematurely old. Indeed, those who are incapable of governing in this way may be under an "excessive nervous or mental strain," but is it not rather from seeking to overcome or subdue, simply because they utterly fail to govern?

Surely we cannot concede that the nervous apprehension of an outbreak of insubordination is a legitimate incident of teaching. The teacher who suffers any nervousness in reference to his government

at once admits his incompetency to govern, and therefore to teach; while *the question of government never disturbs the true teacher*, though that of discipline may. No nervousness—no mental strain on that subject, with him, for he knows that a gesture, a look, or a word, will suggest to the thoughtless pupil his error and its remedy.

And not only this, but he knows also that his position or relation to his school on the question of government is much like that of the Russian Czar—his behest as absolute as an imperial ukase. The health of such a teacher may fail from any one or all the conduces to disease which are incident to a sedentary pursuit, but never from an "excessive nervous or mental strain," simply because he never suffers anything of the kind.

Under these considerations it is perhaps pertinent to ask: Will the competent teacher ever suffer an "excessive nervous mental strain" in imparting instruction? Will he not rather impart instruction with the same ease and as naturally as he inspires?

WASTE OF LETTERS.

TACHYGRAPHY *versus* PHONOGRAPHY.

THE editorial article in the MONTHLY, entitled "Waste of Letters," has awakened and given expression to a restless desire for relief from the drudgery of writing, which will not be fully satisfied till some effectual means of avoiding this toil has been pointed out. The problem is, "To save three-fourths or more of the labor and time now spent in writing." Can it be done? Is there not some serious drawback to all success gained in this quarter? The Chester (Vt.) correspondent, Rev. "C. C. T." has shown a way worthy of consideration. If there is any hope of saving to the editor, the lawyer, the clergyman, and all classes of literary and business men three-fourths of their present drudgery of writing, every means which

promises success deserves a candid consideration.

Rev. Mr. T. refers us to Phonography, invented and published by Isaac Pitman, of England. This system has claims, and they have been for twenty years urged upon literary men. The writer of this article was for many years a teacher of that system, and labored devotedly for its general introduction. If ten years of fruitless toil and bitter sacrifice entitle him to speak, he must in sorrow confess that he has no hope of relief from this quarter. Hundreds, aye, thousands of persons have tried this system and abandoned it forever. Five hundred thousand text books have, I suppose, been sold in this country alone, devoted to this system. Five thousand

teachers have, I estimate, attempted its introduction. And what is the result? The text books lie untouched, and the teachers are silent. It is not true, as our correspondent supposes, that thousands now use this style for correspondence. There was a time when it may have been true; but they have long since put down their phonographic pens, and will never take them up again. Our correspondent writes his sermons in this way, and supposes that multitudes of other ministers do the same. Here again he is mistaken. I, too, supposed so once; but the number is really small. During the last five years, I have not been able to find fifty ministers who so write their sermons, and I have more than ordinary facilities for ascertaining.

I say these things, because success in the grand issue demands a rational view of the field. The introduction of Phonography into schools is advocated by Mr. T. This would be done, with a practicable system; but nearly all schools have abandoned the effort after a brief trial. The Waltham (Mass.) public High School has been noted for teaching the art for ten years, and to-day they can not number six rapid writers among their pupils. But I must draw a veil over these disclosures. If I should tell half that *I know* concerning the utter and unmitigated failures to introduce the art successfully, I should destroy the confidence of many of your readers in the possibility of success by any style of brief writing. I do not wish to do this. I believe success is possible. I believe that we have now in Tachygraphy, or Lindsley's phonetic shorthand, a style as much more practicable than Mr. Pitman's system as that is better

than the rude stenography adopted in the days of Cicero.

Rev. Mr. T. says "it is true that the system (Pitman's) is somewhat difficult of acquisition." Such is not the case with Tachygraphy. It can be mastered more easily than common longhand. Besides this, its simplest style can be written twice as rapidly as the corresponding style of phonography. Again, it is vastly more legible than phonography—quite as legible as the best-written longhand writing. Old writers and teachers of Phonography are everywhere taking up this new style, and they advocate it with an enthusiasm proportioned to their former disappointment. The leading principles of the new system are, First, *Continuity*. The signs for the vowels are joined in the outline, which adds greatly to the speed of the writing. Secondly, *Definiteness*. Every letter has a form of its own, instead of depending on the accident of position, as the vocal signs in Pitman do. Thirdly, *Simplicity*. All arbitrary word signs and contractions are avoided (in the common style), and the letters that form the word (when spelled as pronounced) are written one after the other, in the same natural, graceful manner as in the ordinary handwriting. Speed is gained by using a simple letter of one stroke instead of the old letters which require three to seven strokes, and by omitting all silent letters.

If one-half the effort had been bestowed on this new system which has been wasted, during the last twenty years, on Phonography, the country would have been full of rapid writers, the art would have flourished long ago in all our schools, and the drudgery of writing have been ended for ever.

ANCIENT PAPER.

IN examining a mass of rolls at the Record Office, dated 1388, Mr. Toulmin Smith has made the discovery that linen paper was thus early used in England. The quality is peculiar, and is apparently an imitation of the texture of vellum. It

is as durable as vellum, and after five hundred years of very bad treatment it has proved itself to be equally valuable for the preservation of public records. This discovery raises the question as to the date of the first paper manufactured in England.

AMERICAN EDUCATIONAL MONTHLY.

JULY, 1865.

SCHOOL WORK AND HOME INFLUENCE.

“ONE of the chief difficulties with which an American teacher has to contend, is the apathy of parents.” So says an English writer. Is he right? Does American phrenology ignore the organ of philoprogenitiveness? Do we not kiss our babies till we induce an inflammatory condition of infantile cuticle? Even in educational matters, do we not send our boys to school with as substantial a lunch-eon as British gastric would require, and supply our girls with *bon-bons* till they rival Parisian demoiselles and grow beautifully pale with dyspepsia? And yet, the stricture is not inexcusable. Schools are numerous, text-books are cheap; our educational facilities are not neglected. But having sent their boys and girls to school, many persons seem to think their responsibility ended, and that parental solicitude may terminate at nine o'clock in the morning. They are confident that the means of instruction have been provided, and, piously if not philosophically, they leave results to the hand of providence and the ferule of the pedagogue.

This degree of apathy is not the result of radical indifference. Apathy is caused, says a foreign writer, of whose views and experience we avail ourselves, by the impracticability of forming a correct estimate of the pupil's progress, or of the real character of the teaching in any school. Flagrant carelessness on the part of teachers it may be only too easy to discover, and even nicer flaws in discipline and management it may need no extraordinary skill to detect; but it is very seldom that a parent can ascertain how far the system under which the pupil is trained is good or bad,

and whether his progress is real or only apparent.

Hard as it is for a parent to know the kind of instruction and training which his son is receiving, it is harder still to make him know and understand the extent of his son's capacity, or incapacity. It takes a long time to convince a man that his son is a dunce, that he has a weak intellect, or a bad disposition. We are as blind to our children's faults as we are to our own; perhaps because they are our own. When Frank is backward in French, it is because Monsieur is not a good teacher. It is never taken into account that Frank is an idle dog, who spends the better half of his French lesson in studying the New York Ledger, or in practicing “freehand drawing,” till the pictorial embellishments of Fasquelle's text make it a “budget of fun.” “Boys is boys,” says his Aunt Huldah, extenuatingly, and, taking exceptions to her grammar, we assent to her truism. But if that excuses their frivolity, may it not also have much to do with their ignorance?

But how is the co-operation of the teacher and the parent to be established? Only by making the parent thoroughly aware of the actual capacity of his son, as well as of the actual worth of the education he is receiving. This can be effected by a system of periodical *written examinations*. In saying so, we may not appear to be propounding anything new. Many teachers are in the habit of systematically examining their pupils in writing, on the work of a half year, or of a shorter or a longer period. It is therefore necessary to add, as distinctive requirements, that each examination should embrace all the subjects taught in the school; and that *each boy's written papers,—exactly as they came from his hands,—should be regularly sent to his parents or guardians, accompanied by printed copies of the questions, having the proper numerical values attached to each answer.*

The questions should be printed on sheets having a double column in the mar-

gin. In one of these columns enter the *maximum* value which each question can obtain. Leave the other column blank, for the teacher to insert in it, opposite to each question, the proportion of the maximum value allotted to the pupil's answer. The teacher should make no marks or corrections on the manuscript papers. He should examine them, compare them with one another when necessary, and enter the values without note, comment, or emendation of any kind. Whatever comment or explanation is necessary, should be made in a special report upon each boy's papers, accompanied by a statement of his aggregate value in all the departments of his examination.

Let the *maximum* value for each subject be 100. Any boy's allotted value in one subject, therefore, is an exact percentage, showing his *special* proficiency in that subject. By comparing his percentage in any two or more subjects, we ascertain his *comparative* proficiency therein. By striking the average of his percentages, we ascertain his *general* proficiency in all the subjects which he is studying. These results obviously enable us at once to compare the working of one pupil with that of the others in his class; but, still further, by taking the average of each class, either in one subject or in all, we are able to institute a comparison. Thus we are able to call in the aid of a wholesome rivalry, between pupil and pupil, and between class and class.

The great recommendation of the system, however, is, that it keeps each parent constantly informed regarding the pupil's mental state, and thus keeps up a constant home interest in his progress. He will soon discover his strong and his weak points. He has before him a quarterly transcript of the pupil's mind, which is as valuable, as an intellectual report, as a quarterly photograph would be for showing his robustness and personal appearance.

The frequency of the examinations, and the sending home quarterly of the ques-

tions and answers would be a safeguard against fraud. But a far more effectual check could in practice be provided. In the alternate quarterly examinations (or half-yearly) all the papers should be set by independent examiners, and they should examine, not merely on the work of the preceding quarter, but on the work of the preceding half-year. On these occasions the passages selected for translation, and the questions to be asked, would be unknown to teachers and to pupils, until the hour of the examination. The answers, written without the aid of books, or notes, or hints of any kind, would be a guarantee of the good faith of all parties concerned. It may be asked, why not have all the examinations conducted by these examiners? For this valid reason, that the fact that the teacher is to examine on his own work will give greater interest, and secure greater attention, to his daily lessons. The pupils can not tell which day's work the teacher may select in his examination. They are, therefore, constrained to attend to every day's work. The teacher can not tell what passage may be selected by the examiner. He is therefore constrained, equally with his pupils, to attend to every day's work, and not to give his strength only to those parts of the work upon which he may himself intend to examine.

This system would establish an intimate relation between the parents and the school, and give them complete insight into all its plans, enabling them to see at once all its excellencies and its defects, and to suggest improvements, either in general arrangements, or in particular cases, where they were considered desirable. The system would of course be most practicable in a school of limited numbers; but, with a proper division of labor, there is nothing to prevent its adaptation to the largest public schools of New York or Boston. There can be little doubt that if it were adopted, it would give an immense impetus to truly intellectual training.

MUSICAL INSTRUMENTS FOR SCHOOLS.

IN the schoolroom, music is equally valuable as a study and as a recreation, and is fast becoming appreciated as a means of moral, mental, and physical culture.

The chief obstacles to the general use of music in schools have been the difficulty of introducing it without the aid of a suitable instrument, and the considerable expense thus involved; the cost of a good piano-forte placing it out of the reach of many, while the various reed instruments, procurable at less prices, have often been unsatisfactory. Recently, however, an instrument of the latter class has appeared, which is worthy of high commendation, and as it seems to be a suitable instrument, of moderate cost, we feel that in directing attention to it, and pointing out its peculiar features, we shall be advancing the interests of our schools. We allude to the Mason & Hamlin "Cabinet Organs." In these instruments the tone is produced by a vibrating metallic tongue, or "reed," as in the melodeon, but with a difference in the relative length and thickness, insuring better results. The quality of voice is remarkable, being round, smooth and free from the thinness of tone by which the reed is usually characterized.

In other respects also improvements have been made; but we particularly advert to only a few points, showing the advantages of the cabinet organ as a school instrument.

Obviously, one of the first objects in musical instruction is to give the learner clear and accurate ideas of what is technically termed the *pitch* of musical tones. As there is no worse musical fault than that of singing out of tune, it is evidently of the greatest importance that the ear and other organs of the pupils should, from the beginning, be correctly and carefully trained. This must be done by the constant presentation of a correct model. For this purpose the teacher's voice can not be entirely relied upon; it would be too great a task for his vocal organs, and, moreover,

very few are sufficiently accurate in this respect to serve as models for imitation. On the other hand, if an instrument is good and in tune, it can be depended upon for something like mathematical accuracy in pitch. The piano, manifestly, is too liable to be out of tune. It is easily affected by changes in the temperature and humidity of the atmosphere, and to be kept in tune requires a degree of attention which in most schools is impracticable.

Now, it is one of the merits of the Cabinet Organs, and it will be seen that it is a great one, that their tones, being produced by reeds, have very little liability to vary in pitch. They are not affected in any material degree by atmospheric changes. Hence this instrument is an appropriate model with which to train the ear, as it admirably retains its accuracy. In one of the musical journals, the experienced teacher Mr. George F. Root alludes to this subject, stating that he has observed much more accuracy in pitch in the singing of those who while studying music had practiced with an instrument not liable to be out of tune.

We have enlarged upon this one advantage of the Cabinet Organs, because it will not be likely to receive the attention which more obvious features will secure. But it has other advantages,—great power of expression, quickness of utterance, and a steadiness and roundness of tone admirably adapted to sustain and guide the voice and illustrate differences in musical rhythm.

Affording these advantages at a moderate cost, the Cabinet Organ is certainly worthy the attention of all who are interested in school music.

CALORIC IN THE SCHOOLROOM.

IN the article "Ventilating and Warming," our contributor makes some strictures on prevalent practices in the warming of rooms, worthy a careful consideration. We are so frequently warned of the effects of impure, poisonous air, and it is so obvious and so obnoxious to the senses, that

few except the most ignorant and most stupidly reckless persons can willfully expose themselves to its influences. How to ventilate a room is a question often asked and often answered; how to warm a room, is an inquiry seldom heard unless the mercury is falling in the thermometer or anthracite rising in the prices-current.

But, in reality, an atmosphere improperly warmed—as it must necessarily be when almost any one of our modern expedients is resorted to—is scarcely less deleterious than when weighted with carbonic gas and pulmonary poisons. Just now, Jack Frost

and his myrmidons, the coal-dealers, have no especial claims on our attention. The time of the raking of cinders has past; the era of mosquito-nets and palm-leaf fans has arrived. But Chronos, who is now conscripting flowers, will soon demand tribute in Lehigh. We really hope that, meantime, the commissaries and inspectors in the school department will give the subject a moiety of the attention it deserves, and that the warming of our schoolhouses may not be left entirely to the convenience and caprice of those on whom such an important duty devolves.

EDITORIAL CORRESPONDENCE.

PORT JERVIS, N. Y., May 29, 1865.

MR. EDITOR:—The author of the article "Rudimental Music" judges in my opinion very harshly on established systems in Music and Musical Instruction Books. He disapproves of the term "natural." The scale of C is the model of formation for all other scales. To avoid new denominations, sharps and flats have been introduced. As the original model scale, the scale of C major becomes to the pupil the most natural scale, although it is no more natural than B flat minor, or any other. An illegitimate child is called a natural child, although no less natural than any other child; so too in the case of "naturalized" persons who lived in the United States for years and years without taking out their "first paper." A sharp or flat naturalized, becomes one of the original sounds of the scale of C major, and therefore the term Natural answers exactly the idea and the purpose.

The author further says, "It is wrong to give beginners the impression that sharps and flats represent black keys." No instruction book to my knowledge ever taught such a theory, nor did teachers unless they were as ignorant as their pupils; but as B sharp and E sharp occur but in pieces which the pupil plays after many years of tuition, B sharp and E sharp are forgotten, while the others are remembered.

Further: "Too much science is crammed into Instruction Books." If the author had said "Science is too much crammed into Instruction Books," nobody would doubt his assertion. But his further de-

monstrations show that he actually means that science should be spared to the pupil until he is a "prima vista" reader. Now, I not only think but know, by experience, that theory is a twin sister of practical knowledge and that they should never be separated; they can go hand in hand without retarding mutual progress.

The writer can not understand, as he says, how songs can be taught with piano accompaniment without previous instruction in Vocal Music. The process is simple. A proper theoretico-practical training on the piano will and must develop the "musical ear," which development is one of the most important objects of vocal instruction. Thus the pupil will be enabled to sing correctly, although perhaps with a weak and practically little developed voice. Just as well might the author have wondered how a person can keep time in dancing without previous instruction in quavers and semiquavers. "Instruction books" we are told, "are not complimentary to teachers." They need not be; they are, if required, dictionaries for the teachers and grammars for the pupil, and that is what they are intended to be.

Despite all these incongruities the author has made some very good and useful remarks, among which are, for instance, the want of a system of fingering, on the need of a better name for the two pedals in use, method of writing from dictation and memory, and method of teaching transposition. These wants can easily be supplied. But the effect of such improvements depends on im-

portant conditions which are generally not given, and which the author has not mentioned. Do not tear down a building that does no harm, although it has many defects, before you can put a better one in its place. If you name the disease, name the remedy. I for one am willing to do so when called upon. A. E.

[The article referred to did not purport to be a comprehensive system of music-teaching, but, rather a protest against some of the most common errors of teachers. It certainly tended to remove those errors; but the reviewer who dislikes this negative character will be welcome whenever he may come with something positive and reliable instead.—J. W. H. C.]

NEWARK, N. J., June 3, 1865.

MR. EDITOR,—A great many improvements have been made in the method of instruction in almost every department of education; we are supplied with text-books of all kinds, teachers are becoming more adapted to their occupation, and schools are therefore becoming more important and more numerous.

Every department of education seems to receive its full share of attention except penmanship, which, we must acknowledge, is sadly neglected, not only in our common schools but in our academies; very little attention is given to this department. In fact, in almost all our institutions the pupil is left to himself in acquiring this art. The only institutions that teach it systematically are the commercial colleges.

We want more general instruction. It should be given an important place in the course of instruction in every common school and academy, that every boy and girl in the country may acquire a rapid and elegant style of writing.

We are a nation of scribes, but have few elegant penmen. The tendencies of the

age, however, are progressive, and we are confident that as the community—particularly the educational community—feel the importance of a more thorough and systematic training in this branch, the more it will be taught, appreciated and perfected.

We want teachers who can execute good penmanship, and teach it on scientific principles—giving a “why and wherefore” for every curve, line and angle which they present.

Good penmanship is an accomplishment which should not be passed over. It can be easily acquired under the guidance of a skillful teacher, and should be considered an important element in an education of every kind. Every teacher should endeavor to perfect his penmanship; study some system, and be able to conduct a class by black-board elucidations. Copy-books can be used successfully when they are accompanied with oral instruction, and the errors of students carefully pointed out and corrected. Position and movement must be thoroughly explained, and simple exercises given each student until he has acquired a free use of the pen.

The *slope* of letters, *spacing*, *shading*, *height*, etc., can be explained on the black-board, the most common faults of the class drawn together with correct forms, and the differences pointed out.

By this means, as the student progresses in ease and rapidity of execution, his taste becomes cultivated, he readily acquires the correct forms which are presented to him, and becomes, in a short time, a rapid and correct penman.

Will teachers take the matter in charge and see that a more thorough course is adopted in this department? If so, we may expect to see a great change in the penmanship of the country, which will be in keeping with the requirements of the age. G. A. G.

EDUCATIONAL INTELLIGENCE.

MINNESOTA.—Some time ago Hon. D. Blakeley, State Superintendent of Public Instruction, called a convention of the County Superintendents and County Examiners of Common Schools of the State, for mutual consultation, and the consideration of important measures affecting the interests of the common-school system. The convention was held on the 28th and 29th ultimo.

The following, among other subjects, were discussed, and appropriately acted on:—The

best methods of conducting Teachers' Institutes; the means by which the visitations of schools by Superintendents may be made the most useful to the schools; the best methods of conducting the examinations of teachers; the relations of the Teachers' Institutes and of the Normal School, to the Common School system of the State, and how these agencies are made to perform their part in the improvement of that system; means to improve the condition of the school houses of the

State; measures for arousing public attention to the present condition of the Common Schools. Gentlemen of experience and ability had prepared papers upon some of these subjects, which, with the discussions following them, were interesting and valuable.

The examination of the State Normal School took place on the 27th and 28th ultimo. During this examination every opportunity was afforded for showing the methods of teaching adopted, that all might become thoroughly acquainted with the organization and objects of the institution—including the operation of the Model School. The examination was highly creditable.

Minnesota is moving in the right direction, and bids fair to rival some of her Eastern sisters at no very distant day.

NEW YORK.—Mr. B. S. Gregory, of Jamesville, School Commissioner in Onondaga County, recently made some valuable advisory suggestions to the teachers of the Third Commissioner District of his county. They are adapted to any locality, hence we give them in full:

1.—In the morning be at your schoolroom at least twenty-five minutes before nine o'clock.

2.—Have order commence the moment the bell has rung, and teach your pupils to enter and retire from the room in a quiet and orderly manner.

3.—See that the schoolroom is thoroughly swept at least once every day, and the furniture properly arranged.

4.—Allow no chewing of gum, or eating in school-time.

5.—Teachers are apt to give too long lessons; give *short* lessons, and require them to be *thoroughly* learned.

6.—Have a written programme of exercises posted in the room, and follow it to the letter.

7.—Have all your classes (except the advanced class) read their spelling lessons in the class before spelling; and in spelling, the pupil should pronounce the word after the teacher, and each syllable should be separately pronounced; I would allow my pupils to spell but *once* on a word,—the first effort is a test of knowledge, the second is mere guess-work, and a waste of time.

8.—In primary reading endeavor to have the pupil learn the words at sight, rather than by spelling them out.

9.—In your other reading classes have your pupils thoroughly understand the names and uses of all punctuation marks, and always observe them in reading.

10.—The common faults in reading are neglecting pauses, speaking too low, indistinct articulation, and reading too fast. To obviate this difficulty I would advise concert reading each day, of about five minutes to a class.

11.—Be very particular in making your entries of attendance in the register correctly,—keep your register neat and clean,

and make your entries with pen and ink; the appearance of the register is generally an index of the personal neatness of the teacher.

12.—Never allow a pupil to interrupt you when engaged in hearing a class spell or recite, nor to ask questions so as to be heard by the school. If a pupil desires information, let him indicate it by some sign generally understood by pupils and teacher, and the latter should promptly attend to these calls when made at the proper time.

We are informed that the doors of the State Agricultural College, at Ovid, N. Y., have been closed. The State will doubtless use the buildings for some kind of an asylum.

PENNSYLVANIA.—The Legislature at its last session enacted, and it is now the law, "that twenty-two days shall be held to be a school month, and that two Saturdays in each month, as the proper board shall designate, which two Saturdays shall be held to be a part of the school month, may, at the discretion, and by an affirmative vote of a majority of all the members of the board of directors, or controllers, be appropriated to institutes for the improvement of the teachers of the said district: Provided, That in districts, in which the schools are, or shall be, kept open, and in operation, the maximum term now allowed by law, and the teachers employed by the year, the foregoing clause as to the number of days in the school month shall not apply any further, than that the reports and statistics of the schools shall be kept in accordance therewith, and that district institutes may be held as thereby directed; all acts or parts of acts, inconsistent herewith, are hereby repealed."

This amendment leaves it with the board of directors to decide whether or not a district institute shall be held on every alternate Saturday. The law still stands "that no school shall be kept open for purposes of ordinary instruction on Saturday." Therefore, if there is no institute it will take the teacher four weeks and two days to teach a month. If two institutes are held each month, the month will be completed in four weeks.

Another amendment fixes the age at which pupils may be admitted to the public schools at *six* instead of five years.

The Legislature of the Keystone State has done a noble act in assuming the guardianship of the destitute orphan children of her soldiers and sailors who have fallen in war. Provision is made for furnishing them with homes and instruction in boarding schools, and in some of the benevolent institutions, as Orphans' Homes, till they arrive at the age of sixteen years, when, at the request of themselves or friends, they may be apprenticed for the remainder of their minority. Hon. Thomas H. Burrowes, formerly State Superintendent of Public Instruction, and editor of the *Pennsylvania School Journal*,

is superintendent of the enterprise, and in his hands this important labor of love and gratitude to these "children of the Republic" will be faithfully and wisely discharged. Girard College for orphans, in Philadelphia, now numbers five hundred and sixty-three pupils, — an increase of more than three hundred since 1857.

MASSACHUSETTS.—The American Medical Association at its last session, assigned the second Tuesday in May for the next annual meeting. President, D. Humphrey Storer, M. D., Massachusetts; Vice-Presidents, Q. F. Hibbard, of Indiana, S. O. Almy, of Ohio, T. C. Dunn, of Rhode Island, W. P. Johnson, of District of Columbia; Assistant-Secretary, Jerold E. Morgan, of Baltimore.

NEW HAMPSHIRE.—The report of the State Board of Education for the year ending June, 1864, is a document of 364 pages, made up largely of the reports of the twelve County Commissioners, together with extracts from the reports of the superintending committees of the several towns. The Secretary suggests needed improvements in the school-system, and urges, with force and ability, the importance of making some provision for the better qualification of teachers. The State has no school journal, no normal school, and no institute system. The vicious New England practice of praising and criticizing individual teachers in public reports, crops out in many of the town returns. The sagacious and original Shirley, of Andover town, gravely informs the Board that "if there were no parents, teachers would have much less difficulty!"

The American Institute of Instruction will hold its next annual session at New Haven, Conn., August 15, 16, 17.

KENTUCKY.—The Bransford Seminary buildings, Owensboro', Kentucky, were erected by the liberality of Benjamin Bransford, at a cost of \$27,000. Professor Bowden recently opened the school in these buildings with flattering prospects of success. He is a superior teacher and a worthy gentleman.

COLLEGE FOR THE DEAF AND DUMB.—An important measure for the benefit of the Deaf and Dumb has been consummated by the establishment of a college at Washington, D. C., under the Presidency of Edward M. Gallaudet, A. M., a son of the distinguished philanthropist, who was so long at the head of the Hartford Institution. Arrangements have been made for a thorough course of instruction under competent professors and instructors, and the institution is under the control of a Board of Directors, with Hon. Amos Kendall at the head.

FREEDMEN'S SCHOOLS IN LOUISIANA.—The Board of Education for Freedmen in the Department of the Gulf has issued its first report, after nearly a year's operations. We learn from it that on the 1st of January, 1865, there were 95 schools, 163 teachers, and 9,571 pupils, besides whom there were some 2,000 adults under instruction in night

and Sunday schools. Of the children, 2,103 were learning the alphabet; 8,301 spelling; 7,623 reading; 4,623 were studying mental arithmetic, 1,233 practical arithmetic, 1,338 geography, 283 grammar; 3,833 were writing on slates, and 1,108 were writing in copy books.

ILLINOIS.—The National Lincoln Monument Association, at a meeting recently held in Springfield, Ill., unanimously resolved to invite the teachers and pupils of the public schools in the United States to co-operate in the enterprise of erecting a national monument to the memory of the late President in that city.

CALIFORNIA.—The current number of the *Teacher*—one of the best of our exchanges—contains a paper on the "Geography of California," giving much important information concerning the Pacific coast.—The State Normal School is making good progress.

FRANCE.—The efforts on the part of the liberal party to introduce a measure calling for gratuitous and obligatory instruction in France, have resulted in pitiable defeat. This most essential of all reforms, which was proclaimed in principle by the Chief of the State in grandiose fashion in his late discourse from the throne, and which was accepted with all its consequences by M. Duray, the Minister of Public Instruction, in a report which is admitted to be completely irrefutable, was entirely extinguished by the voices of the legislative assembly, only seventeen out of two hundred and twenty voting for it. Only the day after the opening of the present session by the Emperor, a very intelligent Parisian lady, in speaking of the imperial phrase on the subject—"In a system of universal suffrage it is essential that every citizen should know how to read and write,"—said: "You will see that these are the merest words, and that no steps will be taken to advance the enlightenment of the people, for to their ignorance is due the duration of the empire."

SIBERIA.—A Russian merchant, M. Sidorow, who has acquired an enormous fortune in Siberia, has given the sum of 120,000 roubles and the produce of a vast auriferous territory towards the foundation of a university at Tobolsk. A Russian journal, which seemed to throw some doubts upon the realization of his scheme, only produced the effect of making him send another sum of 20,000 roubles and two huge gold nuggets to the government towards the furtherance of the plan. There is no reason why, with this enormous sum, and the 50,000 roubles contributed for the same object by M. Demidoff in 1803 (a sum which, untouched since, has now increased to 75,000 roubles), a Tobolsk university should not in reality be founded soon.

Eight thousand school-houses have been erected in Russia since the emancipation of the serfs took place.

CURRENT PUBLICATIONS.

WE observe in most text books now in use on Astronomy, too many attempts to present matters in a popular light at the expense of accuracy and completeness. Doubtless this has been owing in some measure to the inferior grade of many of our colleges. Now, however, such institutions are being placed upon a firmer basis, and demand is made for works of more thorough and practical character. Prof. Loomis' has, we think, supplied the want. To those who have used his other works, and are acquainted with the peculiar force of his method, the treatise on astronomy will recommend itself. He makes no effort at popular simplicity. The subject is treated in a dignified and comprehensive manner, so that the student who reads the book attentively may gain a distinct apprehension of the subject. The work is of advanced character, intended to succeed a full course of mathematics, and is specially adapted to the higher classes in colleges. It is provided with carefully arranged tables and is illustrated with excellent plates and many woodcuts. The style is remarkably precise. The work is a fitting close to Professor Loomis's series.

The author of "John Halifax, Gentleman," has given us a new book,² which is well worthy of the high reputation of its author. It is a high-toned, moral tale; exceedingly well written, and interesting throughout. Its principal personages are Dr. Arnold Grey, the Head-Master of Saint Bede's, one of the most ancient of the minor colleges of Avonsbridge, and Christian Oakley, a poor Governor, who afterward became Mrs. Grey; Edwin Uniacke, a wild student, has considerable part in the story. The book is full of pleasant allusions to college life in Great Britain. To the teacher it will prove specially interesting and suggestive. With all its other merits, the story ends well. It is printed and bound in the very best style of its famous publishers.

Good intentions are always praiseworthy—never more so than when the intention is to make a good book. The author of *The Blade and the Ear* is one of the staid writers who, having a good purpose, work industriously for its accomplishment. His book³ is a moral missile aimed at the young men of this degenerate age and per-

verse generation. "A youth once myself," says the author, with incomparable ingenuousness, "I know full well both the aspirations and the enticements of that period of life." As we can not call to mind the name of any writer who prior to becoming an author had not been a youth once himself, we are not able to perceive that our author can claim greater wisdom or infallibility than his compeers possess. Do we misunderstand him? Does he mean merely that he was *once himself*, and that he is now in his dotage or beside himself? Perhaps so. A man surely does not act rationally when, assuming to supersede the "moral mentors in danger of losing sight of the welfare of the" inexperienced, he hesitates not to entertain his unsophisticated readers with the vulgar description, by "an observer," of a fashionable watering place, and thus in an indirect manner familiarizes them with coarse expressions, cant terms, and the vile weeds of rhetoric which should be tolerated only, if at all, in gaming-houses and police-gazettes. To atone, perhaps, for this dereliction, our Mentor elsewhere employs ecclesiastical terms and prayer-meeting phraseology with great freedom. He has collated many anecdotes of distinguished men and brief passages relative to their lives and principles, which will be found both interesting and instructive. We have implied that the author's purpose is commendable; we may add that we believe the general influence of his work will be salutary and elevating.

Those teachers have taken a most important step who recognize the principle that in geography the natural features of the earth should be studied before the civil divisions and those facts connected with civil institutions; that physical geography forms the basis of civil geography, and that the two are connected as foundation and superstructure, and that both are to be considered in their logical order and connection if we would become acquainted with the all-comprehensive and magnificent science of *geography* in the true import of that term. Next in importance to the recognition of these principles, and as it were a logical sequence and necessary accompaniment, are suitable means of illustration; and most happily are we provided for in this respect by the elegant and accurate Wall Maps by Guyot. These maps enable us to make the most important advancement in teaching geography that has yet been made in this country. With them the skillful teacher can do more in a fortnight toward giving the pupil correct ideas of geography, than can be done in a year by the old-fashioned question-and-answer system without similar maps.

(1) A TREATISE ON ASTRONOMY. By ELIAS LOOMIS, LL. D., Professor of Natural Philosophy and Astronomy in Yale College. New York: Harper & Brothers. 8vo, pp. 338. \$2.50.

(2) CHRISTIAN'S MISTAKE. By the Author of "John Halifax, Gentleman." New York: Harper & Brothers: pp. 260. \$1.50.

(3) THE BLADE AND THE EAR. Thoughts for a Young Man. By A. B. MIZZELL. Boston: Wm. V. Spencer. 16mo., pp. 223. \$1.

Pre-eminent among these maps, and worth more to any good school than the cost of the whole series, is the Map of the World, drawn on Mercator's projection. By an admirable plan of representation, this magnificent map (6 ft. by 8½) shows all the most important facts in geography—those which constitute the basis of all the others. Would we teach the distribution of the lands and the waters, and their relative proportions? A correct and definite idea of these facts may be given in an hour. Would we teach the shapes of all the lands, and of the oceans, their absolute and relative areas? All is revealed to the eye in the most graphic manner. Would we teach the position, direction, real and comparative altitude of all the mountain systems of the world, and their accompanying table lands? It may be done most effectively and rapidly, and finally, by means of this map, not occupying a longer time than is usually spent in tracing out the mountains of a single grand division on an ordinary map. Would we trace the position of all the plains of the earth, their real and relative area? A single lesson is enough to accomplish the work. So in a very short time we may teach and learn where are all the water sheds, slopes and river systems; and the ocean currents and tidal waves are delineated with a graphicness and an accuracy unsurpassed in any other map. In connection with these features are faithful representations of the civil boundaries of countries, location of cities, population of countries, relation of population to area, and all other details which should be placed on a map of this character. It is a duty we owe to the cause of science, to popular education, and to him upon whom the mantle of Humboldt and of Ritter has so worthily fallen, to labor to secure the adoption of the Map of the World, at least, into every good school in the United States.

(4) GUYOT'S MAP OF THE WORLD, Mercator's Projection. Being one of the series of GUYOT'S Physical and Political Wall Maps for Schools. New York and Philadelphia: SCHERMERHORN, BANCROFT & CO. \$12.

The terms "Parlor Book" and "Home Magazine" are almost synonymous with insipidity. A marked exception to the proverbial character of the home-books is found in the new publication of Messrs. Scribner and Co., "Hours at Home," a monthly magazine, edited by J. M. Sherwood. The two numbers already issued indicate that it will endeavour to represent the religious element of literature, but they contain historical and biographical sketches, moral tales, and essays on various topics. The tone is elevated and dignified. We welcome "Hours at Home" as a desirable accession to the line of literary periodicals, believing that it will be free from the vulgarity and frivolity by which American literature is so strongly characterized.

New music is appearing with unabated frequency. Oliver Ditson & Co., Boston, have lately published the following pieces of new music: Children's March, Penitence, Communion, a choice morceau from Beethoven's Symphonies; "O Lord veil not thy face," a sacred quartet—all for the Organ. And for the Piano: Funeral March, with a portrait of Mr. Lincoln; Schubert's Serenade; Spalding's Whip-Poor-Will Polka. Also the following ballads: "Many a Time and Oft;" "Name of him I Love;" "Home Once More;" "Cead Mille Fearthe" (a hundred thousand welcomes); "You'll not be Long Away, be Sure;" "The Fall of Sumpter," with suggestive illustration; "I've Struck Ile;" "Our Grandfathers' Day," by Tony Pastor; "Banting"—these last being comic songs.

William Hall & Sons, 543 Broadway, N. Y., have issued "Eastonia Polka;" "Joke Polka;" "Wedding Lancers;" two songs, "I ne'er again will leave thee," and "Meditation."

William Jennings Demorest, 39 Beckman Street, N. Y., has published "The Nation in Tears," by Professor Konrad Trener, with three full page illustrations; "Petroleum's What's the Matter;" "Love on the Brain," by Mrs. Parkhurst.

SCIENCE AND THE ARTS.

—A committee of the Academy of Sciences reports very favorably of a new automatic temperature regulator which M. Rottaud has attached to his mechanical roaster, and which, the committee says, has worked for eight years with the precision of a piece of physical apparatus and the certainty of a practical machine. The combustion of the furnace is regulated by balance-valves on the pipes through which the air is introduced, which valves are automatically governed by the regulator. This regulator consists of a

mercury gauge, the closed branch of which is attached to a fixed support, while the cistern is freely suspended to the beam of a balance; the varying weight in this branch will cause the beam to assume different positions, depending on the temperature of the apparatus, which variation of position may be used to govern the valve. In order to prevent the barometric changes from affecting the apparatus, the closed end of a syphon barometer, the tube of which is of the same diameter with the gauge, is attached to

the beam, while its cistern is sustained by the fixed support. The barometric changes will then affect these two instruments equally and in opposite directions, and will, consequently, have no effect on the position of the balance beam.

—In the neighborhood of the Caspian Sea, where petroleum-springs are abundant, the inhabitants manufacture fuel by impregnating clay with the combustible fluid; the clods are afterward burned on an ordinary hearth. The Norwegians have long economized the saw-dust of their mills, by incorporating with it a little clay and tar, and molding it into the form of bricks. In England much attention has been given to artificial fuel in many districts, but not with much success, owing to the want of a suitable combustible, which petroleum is, above all others, best adapted to supply.

—In France charcoal is prepared from the refuse of the charcoal furnaces, by mixing it with charred peat or spent tar, and then adding tar or pitch. The materials are ground together and subjected to heat in close vessels, to expel volatile gasses. From seven to nine gallons of tar are mixed with two hundred weight of charcoal powder.

—Professor Gasperi, the director of the observatory at Milan, having discovered a new planet, has determined to make his report on the subject at the anniversary of Dante's birthday, and in honor of the poet, he has christened the new planet Beatrice.

—The fumes of burning coffee are powerful disinfectants. Experiments have been made in Paris to prove this. A quantity of meat was hung up in a closed room until decomposed, and then a chafingdish was introduced and 500 grammes of coffee thrown on the fire; in a few minutes the room was completely disinfected. In another room sulphuretted hydrogen and ammonia were developed, and 90 grammes of coffee destroyed the smell in about half a minute. It is also stated that coffee destroys the smell of musk, castoreum, and assafetida. As a proof that the noxious smells are really decomposed by the fumes of coffee, and not merely overpowered by them, it is stated that the first vapors of the coffee were not smelled at all, and are therefore chemically absorbed, while the other smells gradually diminish as the fumigation continues. The best way to effect this fumigation is to pound the coffee in a mortar, and then strew it on a hot iron plate, which, however, must not be red hot.

—The artificial method of manufacturing ice in hot weather, invented by M. Carre, has proved of actual practical value. He takes two strong iron bottles, connected together with an iron pipe, and nearly fills one with a concentrated solution of ammoniacal gas in water. After connecting the bottles together, and making the joint secure, the one containing the ammonia is put over a fire, while the other dips into water. The action of heat upon the am-

monia drives off the gas, which, not being able to escape, condenses under the enormous pressure in the other bottle as a liquid. When this is effected, the bottle is removed from the fire and cooled, whereupon the ammonia in the second vessel rapidly assumes the gaseous form and abstracts so much heat from the water by which it is surrounded as to freeze quite a considerable quantity.

—The western coast of North America is so much warmer in the winter than the eastern coast that a winter climate no colder than that of New York city extends as far north as 65 degrees, corresponding in latitude with the middle of Hudson's Bay and the almost uninhabitable regions of Labrador. The valley of the Saskatchewan, in latitude 52 degrees, one thousand miles northwest of Lake Superior, is very fertile, and wild cattle live through the winter upon the abundant grasses which it produces.

—Professor R. Bellini, after conducting a long series of experiments on poisoning by strychnia and its salts, arrives at the opinion, that the best antidotes are tannic acid and tannin, chlorine and the tinctures of iodine and bromine. The frog-test for strychnia is not to be trusted, inasmuch as other poisons produce the tetanic symptoms, although in a lesser degree.

—Lead, people should be often reminded, is a slow but powerful poison in all its forms when taken internally, and often its effects are not manifest until too late. Avoid using vessels lined with lead for cooking or keeping provisions in; also the use of this metal for the conveyance of water, as pure water will dissolve the inside of the pipe without the presence of some protecting salt, which forms an insoluble coating and prevents further action; even then there is danger. The simplest precaution is always to draw off the water contained in lead pipe before saving any for use.

—A change of color is now going on in the double star "95 Hercules." The intervals of variation are very short, there being as many as three or four in a single night. In the autumn of 1862 the colors were apple-green and cherry red. In the following April they were greenish and pinkish white; in May both stars were dull white; in August again apple-green and cherry red.

—Herschel has recently observed the spectrum of a shooting star. It appeared near Capella, and was almost as brilliant as that star. He followed it for more than a second in its rather slow motion, and ascertained that its spectrum was as continuous a spectrum as that of Capella, and a little more extended, and, therefore, that it consisted of a solid or liquid substance and not of a gas or incondescent vapor as Mr. Huggins has suggested with regard to some nebulae.

—If we blow a fire it burns more fiercely, but if we blow a candle it goes out. These

two facts taken together are a familiar illustration of the influence of temperature upon chemical affinity. In both cases, that of the fire and that of the candle, the burning is the combining of carbon and hydrogen with oxygen. Now, cold carbon or hydrogen may lie in contact with oxygen for any length of time without combining with either, but if the substances are made red-hot, they instantly enter into chemical combination. When a candle is burning, the heat generated by the combustion constantly raises new quantities of the material to the temperature at which combination with oxygen will

take place, and thus the combustion is kept up. But if a current of air of a temperature far below the combustion point is thrown against the flame, the hot vapors are swept away, and others which are rising in their place are so cooled that combination with oxygen no longer continues; in other words, the candle ceases to burn.

On the other hand, when we blow a large fire, the mass of burning combustible is so great that, instead of carbon and hydrogen being cooled, the oxygen is heated, and the combination is made more active; in other words, the fire burns more fiercely.

MISCELLANY.

—From a report communicated by the Commissioner of Patents to Congress, it appears more business has been transacted than during any year in the history of the Government, excepting 1859 and 1860; 6,014 applications have been received; 4,170 patents have been granted; 787 caveats have been filed; 40 applications made for extensions have been granted. Of the issues, 48 were to English inventors, 37 to French, and 27 to persons of other nations.

—A singular phenomenon, in the shape of a lake of water, has made its appearance in Nittany Valley, Center county, Pa., about three miles from a small place called Horn-town, on the Hublesburgh road, covering about one hundred acres of land, and varying in depth according to the irregularities of the ground, from ten to thirty feet, some say fifty feet. The water is said to come up with force. A subterranean stream has probably burst upward. The water is said to fall a little during the day and rise during the night. It is certainly a great curiosity, and has been visited by a great many people.

—What legion of absurdities have been perpetrated by memory-men, each of whom has a system of his own. Macklin asserted that, by his system, he could learn anything by rote at once hearing it. This was enough for Foote, who, at the close of a lecture, handed up the following sentences to Macklin, desiring that he would be good enough to read them, and afterwards repeat them from memory. Here is the wondrous nonsense: "So she went into the garden to cut a cabbage-leaf to make an apple-pie, and at the same time a great she-bear, coming up the street, pops its head into the shop. 'What! no soap?' So he died, and she very imprudently married the barber; and there were present, the Picinnies, and the Joblilies, and the Garcelles, and the Grand Panjandrum himself, with the little round button at top; and they all fell to playing

the game of catch as catch can, till the gun-powder ran out of the heels of their boots."

—Keep your mouth shut when you read, when you write, when you listen, when you are in pain, when you are running, when you are riding, and by all means when you are angry. There is no person in society but will find and acknowledge improvement in health and enjoyment from even a temporary attention to this advice.

—The Emperor Napoleon III. recently had a quiet evening with a few friends. In the course of conversation he remarked that it was very hard to define *savant*. "I don't think so," retorted M. Drouyn de Lhuys; "I propose this definition: A *savant* is a man who knows all that the world doesn't know, and who is ignorant of what all the world knows."

—"Doctor, I want you to prescribe for me." The doctor feels her pulse. "There is nothing the matter, madam; you only need rest." Now, doctor, just look at my tongue! just look at it; look at it! now say, what does it mean?" "I think that needs rest too."

—A judge decides that a husband may open a wife's letters, on the ground that "the husband and wife are one, and the husband is that one!"

—Dr. Franklin meant a good deal when he said, "A good kick out of doors is better than all the rich uncles in the world."

—None are so fond of secrets as those who don't mean to keep them; such persons covet secrets as a spendthrift covets money, for the purpose of circulation.

—Two nations inhabit France: The one dines, sleeps, yawns, listens, and dwells in Paris; the other, thinks, acts, watches, talks, and inhabits the provinces. The latter is led captive by the former, like a snail by a butterfly.

—Dr. Johnson said of a widower who was about to marry, that it was a remark-

able case of the triumph of hope over experience.

—M. Montigny, French Consul in China, in reference to the use of arsenic by the Northern Chinese, says they mingle it with their smoking tobacco. According to missionaries who have lived a long time there, tobacco free from arsenic is not sold. The same witnesses assured the French Consul that the arsenic smokers were stout fellows, with lungs like a blacksmith's bellows, and as rosy as cherubs. The publication of M. Montigny's statement has called out a letter from Dr. Londe, who announces that some years ago, in the course of a discussion at the Academy of Medicine, on the agents to be employed to cure tubercular consumption, he told the assembled doctors that he had found but one successful means of combating this dreadful disease, and that means was the smoking of arsenic. The doctor reaffirms this commendation of the remedy.

—The smallest natural magnet generally possesses the greatest proportion of attractive power. Iron is the only substance principally attracted by the magnet. The degree of magnetic attraction depends on the strength of the magnet itself, the weight and shape of the iron presented to it, the magnetic or unmagnetic state of the body, and the distance between them. All iron bars standing erect or perpendicularly (such as the iron railings before houses) are magnetic, the north pole being at the bottom and the south at the top. It is also a curious fact that the uppermost part of the iron ring around a carriage-wheel attracts the north end of the magnet, and is consequently a south pole, while the lower part of the same iron in contact with the ground, attracts the south end of the needle, and is, therefore, a north pole. Turn the wheel around, half a circle, and the poles immediately become reversed. The power of magnetic attraction resides wholly in the surface of the iron bodies, and is independent of the mass. An empty bombshell will attract as strongly as a solid sphere of the same material. The cutters in gun-boring become magnetic in consequence of being continually rubbed in the same direction. Wedgewood's black ware, which is made of basalt, attracts the magnet strongly.

—A farmer lately thought he would try the virtue of corn in the ear to supply the place of coal. It worked so well that subsequently he purchased a load of coal and tried it by measure in contrast with the corn; and the experiment developed the fact that the corn fuel was the cheapest and the best. The corn and coal were worth the same price per bushel, 30 cents each, and the corn went the furthest, and made the cleanest and best fire.

—Miles Darden was beyond all question the largest man in the world. His height was seven feet six inches—two inches higher than Porter, the celebrated Kentucky giant.

His weight was a fraction over one thousand pounds! It required seventeen men to put him in the coffin. It took over one hundred feet of plank to make his coffin. He measured around the waist six feet and four inches.

—Some years since, a poor factory girl in Lowell, by rigid economy, "laid up" enough to permit her attendance for a short time in the High School of that city. An intense thirst for knowledge was soon awakened, talent evinced, and a resolute purpose formed, "somehow or other," to secure a thorough education. The result is, that factory girl is the first assistant in a popular ladies' seminary in Montreal. A younger brother, in the employment of the same corporation, was encouraged by the noble example of his sister, and still more by the timely and generous offer of pecuniary aid by the present Secretary of the Board of Education, to secure a collegiate education. Since his graduation, this young man has been the successful principal of a High School.

—The modern young lady is a strange compound of dress and nerves—by which we mean those "exquisite susceptibilities" which cause her to shudder when she sees a wash-tub and scream at the sight of a cow. She is a living image made to be waited upon. She sings "divinely" and plays the piano "exquisitely;" but neither one of these effects you as much as the "jabbering of a North American Indian," for it is not half as intelligible. She lounges about in the morning, crochets or embroiders a little, then dresses herself up and promenades for the benefit of some "genteel exquisite." Thus passes her days. Now, you needn't tell me that old bachelors are continually harping on women's faults—that we do not find any such ladies—that they are the same they always were. It is no such thing. It is an uncommon thing, indeed, to find a young lady now-a-days who half pays for the food she eats.

A curious return is regularly obtained in Scotland from above fifty stations of the Meteorological Society,—a return of the number of hours of sunshine. Taking the mean of all these stations, the number of hours of sunshine in the last seven years has been as follows: In 1857, 1,665; in 1858, 1,825; in 1859, 1,817; in 1860, 1,620; in 1861, 1,674; in 1862, 1,568; in 1863, 1,711. The number in 1858 averaged exactly five hours a day throughout the year. In the six months from April to September, the summer half of the year, there were 1,154 hours of sunshine in 1857, 1,261 in 1858, 1,302 in 1859, 1,093 in 1860, 1,094 in 1861, 1,052 in 1862, 1,185 in 1863, 1,239 in 1864. The number in 1858 averaged very nearly seven hours a day in these six months. In the eight years, 1857-1864, the sunniest month was May in three instances; June in three; July in two.